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ABSTRACT

The Statewide Testing Program assessed the achievement of South Carolina students in grades 3, 6, and 11. The Comprehensive Tests of Basic Skills, Form S (CTBS/S) were used to measure achievement in reading, language, mathematics, reference skills, science, and social studies. Over 126,000 students, representing 91 of South Carolina's 92 school districts, participated in the testing program. The results of the 1976-1977 testing activities are presented. The report discusses the performance of South Carolina students in relation to the nation's performance, and analyzes the results according to race, sex, Title I status, grade level, and skills tested. The purpose of the program, the methodology used, and the interpretation of the test scores are also described. (DSE)

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**South Carolina
Statewide Testing Program
1976-77**

General Report

U.S. DEPARTMENT OF HEALTH,
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Cyril B. Busbee, State Superintendent

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SOUTH CAROLINA STATEWIDE TESTING PROGRAM 1976-77

GENERAL REPORT

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THE OFFICE OF RESEARCH REPORT SERIES

SOUTH CAROLINA STATEWIDE TESTING PROGRAM 1976-77

GENERAL REPORT

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ABSTRACT

The primary purpose of the 1976-77 Statewide Testing Program was to assess the achievement of 3rd, 6th, and 11th grade students in South Carolina's public schools. The results from the Statewide Testing Program provide educators with information which facilitates the decision-making process at the State, district, and school levels.

A standardized norm-referenced test, the Comprehensive Tests of Basic Skills, Form S (CTBS/S), was the instrument used to measure achievement in the basic skill areas of Reading, Language, Mathematics, Reference Skills, Science, and Social Studies.

The previous years' results indicated that a large percentage of students in the lower two grades were scoring at or below a chance level, which is the level at which a student would be expected to score if the student randomly guessed the response for each item on the test. Based upon this observation, the decision was made to offer two levels of the test in the two lower grades tested in the 1976-77 program. Therefore, either Level C or Level I of the CTBS/S was administered to 3rd grade students on a school basis; either Level I or Level II of the CTBS/S was administered to 6th grade students on a school basis; and Level IV of the CTBS/S was universally administered to 11th grade students.

Additional changes in this year's testing included changing the administration dates from fall to spring testing since the CTBS/S was normed in the spring. In changing from fall to spring testing, the lower two grades tested this year were changed from Grade 4 to Grade 3

and from Grade 7 to Grade 6. Although there was no change in the grade tested at the 11th grade, there was a change from the testing of a sample of 11th grade students to testing all 11th grade students in the State. Because of the changes implemented in the 1976-77 testing program, this year's results should not be compared with the results from previous years.

Eighty-one of the 92 South Carolina school districts participated in the Statewide Program at all three grade levels, and ninety-one school districts participated at a minimum of one grade level. A total of 127,736 South Carolina 3rd, 6th, and 11th graders were tested as part of the 1976-77 Statewide Testing Program in late March or early April. At Grade 3, a total of 42,494 students were tested; at Grade 6, a total of 47,971 students were tested; and, at Grade 11, a total of 37,271 students were tested.

In all three grades more than 40% of South Carolina's students scored above the national average in the skill areas of Language, Science, and Social Studies. The lowest performance for all three grades was in Mathematics.

In the area of Language, 43.4% of South Carolina's 3rd graders scored above the national average; 41.8% of the 6th graders, and 40.5% of the 11th graders also scored above the national average.

In the area of Reading, 40.9% of South Carolina's 3rd graders surpassed the national average, while 38.0% of the 6th graders and 36.8% of the 11th graders exceeded the national average.

In Mathematics, 36.6% of the 3rd graders scored above the national

average with 32.4% of the 6th graders and 32.6% of the 11th graders scoring above the national average.

The highest average scores for South Carolina's students were recorded by 6th graders in the areas of Science and Reference Skills. 45.9% of the 6th graders scored above the national average in Science, and 45.5% exceeded the national average in Reference Skills.

Although 6th graders for their grade level outperformed 3rd and 11th graders relative to the nation in Science and Reference Skills (excluding Grade 3), 3rd graders consistently outperformed students in the 6th and 11th grades relative to the nation in Reading, Language, and Mathematics.

About one-fourth of the students tested in Grades 3 and 6 attended Title I schools. Title I schools generally have high concentrations of children who are educationally or culturally disadvantaged. Almost three-fourths of the "Title I" pupils in the 3rd and 6th grades had scores that fell in the lowest 25 percent of the national scores.

Although a number of our scores on the average were below the national sample of students, a substantial number of South Carolina students at each grade level scored well above the national average. In view of the fact that the characteristics of the national sample differ considerably from the characteristics of students in South Carolina in terms of racial composition, socio-economic status, and other factors, the results from the 1976-77 Statewide Testing Program appear encouraging.

CHAPTER I

NATURE OF THE STATEWIDE TESTING PROGRAM

Introduction

The primary purpose of this report is to present the results of the 1976-77 South Carolina Statewide Testing Program. Selected aspects of the data have been analyzed and are discussed within the report. Several additional features have been incorporated in the analysis of the data. These features include an adjustment of the State results to provide a more accurate picture of South Carolina's performance relative to the nation's performance; an analysis of the State results across Grades 3, 6, and 11 by race, sex, and Title I status; and a content analysis of the State results. A brief description of each chapter of this report follows.

Chapter I: Nature of the South Carolina Statewide Testing Program. The first two sections of this chapter include the purpose of the testing program and the program objectives. Major changes in the 1976-77 Statewide Testing Program that affect results interpretation are outlined in the third section. The closing section describes major developments in the Statewide Testing Program with respect to populations tested and instrumentation for the 1971-72, 1972-73, 1973-74, 1974-75, 1975-76, and 1976-77 Statewide Testing Programs.

Chapter II: Methodology. This chapter consists of four sections related to the methodology employed in conducting the 1976-77 Statewide Testing Program. The grades tested, the criteria for determining those

students who were not eligible to be tested as part of the program, and the numbers and percentages of students tested in each grade are discussed in the "Participation Section". The instruments administered in each grade tested and the functional-level testing approach are discussed in the "Instrumentation Section". In the "Procedures Section," the procedures essential to the operation of the Statewide Testing Program are briefly described. The limitations on the State test results imposed by the change from fall to spring testing and functional-level testing are discussed in the "Limitations on Interpretation of Test Results Section".

Chapter III: Interpretation of the Test Scores and Score Reports. The first section, "Norm-Referenced Test Interpretation," describes the construction of a norm-referenced test and poses several questions which the results from a norm-referenced test can assist in answering. In the second section, "Definitions of Test Scores," means, medians, raw scores, scale scores, percentiles, stanines, grade equivalents, and normal curve equivalents are defined; and their strengths and weaknesses are discussed. In the third section, "Description of Score Reports," the Individual Test Record, the Class Record Sheet, the Right Response Summary, the Frequency Distribution, and the Evaluator's Summary are briefly described in terms of the information and test scores provided on each report.

Chapter IV: South Carolina Student Performance in Grades 3, 6, and 11. In the first section, "Comparison of Student Performance in South Carolina to Student Performance in the Nation," the performance

of the students in South Carolina is compared to the performance of students in the nation for each of the major skill areas using median national percentiles. Primarily through the use of normal curve equivalents, South Carolina student performance is compared across grade levels and across skill areas in the second section, "Comparison of Student Performance in South Carolina Across Grade Levels and Across Skill Areas". In the third section, "Comparison of Adjusted South Carolina Data to the National Normative Data," South Carolina's data are adjusted so that the composition of the student population in South Carolina is more compatible with the composition of the national normative sample. Comparisons across Grades 3, 6, and 11 for the race, sex, and Title I subgroups are made for each of the three grade levels in the fourth section, "Comparison of Subgroup Results for Grades 3, 6, and 11".

Chapter V: Content Analysis of Reading, Language, and Mathematics for Grades 3, 6, and 11. In this chapter, South Carolina student performance in the Reading, Language, and Mathematics content and thinking process areas is discussed by grade level. Logical and empirical content validations of the test items for each grade and each level of the CTBS/S were conducted to establish the appropriateness of the tests for the students in South Carolina. Additionally, strengths and weaknesses in student performance are pointed out based upon the data provided on the Right Response Summary.

Purpose of the Statewide Testing Program

The purpose of the Statewide Testing Program is multifold. The testing program continues to provide a means of monitoring student achievement in the South Carolina public schools. Within the State Department of Education, the testing program data are used in the evaluation of several objectives which are included in South Carolina's Five-Year Plan for Continuous Upgrading of Education. Equally important, the test results provide educators with information which facilitates the decision-making process at the State, district, and school levels. Concurrently, the Statewide Testing Program provides a considerable service to districts in that the program funds alleviate a portion of the financial burden of the district testing programs. Furthermore, the Statewide Testing Program constitutes a sizable component of the testing programs of many districts; and, in many cases, supplements testing for the evaluation of Title I programs.

Objectives of the Statewide Testing Program

The objectives of the Statewide Testing Program were originally established in 1970-71 as part of the 4th grade testing program. These objectives, however, have been modified over the past six years to reflect the yearly changes in the testing program. The basic objectives for the 1976-77 testing program were as follows:

1. to provide a valid measure of student achievement in the basic skill areas of Reading, Language, Mathematics, Science, and Social Studies in Grade 3;
2. to provide a valid measure of student achievement in the basic skill areas of Reading, Language, Mathematics, Reference Skills, Science, and Social Studies in Grades 6 and 11;
3. to compare the achievement of 3rd, 6th, and 11th grade students in South Carolina with the achievement of 3rd, 6th, and 11th grade students in the nation using the national normative data provided by the test publisher;
4. to determine the achievement levels of students in Grades 3, 6, and 11 in order to assist in the development of instructional objectives and to evaluate the degree of effectiveness of these objectives;
5. to fulfill the requirements of the Basic Skills Major Objective as specified by South Carolina's Five-Year Plan for Continuous Upgrading of Education;
6. to provide a measure of educational quality in South Carolina public schools in the fulfillment of the Evaluation Major Objective of South Carolina's Five-Year Plan for Continuous Upgrading of Education; and
7. to encourage effective utilization of test data in guidance and instructional programs in Grades 3, 6, and 11.

Major Changes in the 1976-77 Statewide Testing Program

In the 1976-77 Statewide Testing Program, several changes were implemented which were significant enough to establish this year's testing results as the new baseline data for the testing program. First, a survey of district superintendents indicated that the majority of the districts in the State preferred spring testing to fall testing. Therefore, the actual time of test administration was moved from fall to spring. The change in testing dates was favored for several reasons. Since the Comprehensive Tests of Basic Skills, Form S (CTBS/S), the instrument utilized in the testing program, was standardized in the spring, spring testing enabled a more accurate comparison of South Carolina achievement data to national normative achievement data. Furthermore, the spring testing permitted districts to utilize the test results for the dual purposes of evaluating student achievement at the local level and evaluating Title I programs. As a consequence of fall testing in previous years of the testing program, many districts were required by Title I program regulations to retest students in the spring. Students in grades tested as part of the Fall Statewide Testing Program were also retested in local district spring testing programs. Thus, duplicate testing of students was greatly reduced by the change in administration dates. Finally, the spring test administration enabled districts to use the test results as the basis for making modifications and changes in existing instructional programs which could be implemented in the fall of the 1977-78 School Year.

A change in the populations tested coincided with the change in the time of test administration. This year's testing included students in Grades 3, 6, and 11 rather than students in Grades 4, 7, and 11 as in the past. The reasons for changing from Grade 4 to Grade 3 and from Grade 7 to Grade 6 were:

1. to obtain a measure of student achievement at the end of the primary (Grade 3) and intermediate (Grade 6) years of public school,
2. to maintain comparability with the spring normative data, and
3. to insure that the testing data reflected a measure of achievement rather than a measure of subject matter retention.

The testing of Grade 11 students was maintained in order to fulfill requirements of the specific objectives associated with the Basic Skills Major Objective of the State's Five-Year Plan. The Department felt that there was need for identifying achievement deficiencies in students who were close to exiting their public school education so that attempts could be made to remedy these deficiencies before graduation.

The 1976-77 testing program included testing the universe or total population of students in Grades 3, 6, and 11. Although the population of students in the lower two grades had always been tested, this was the first year that all 11th grade students rather than a sample were tested. There were two reasons for the move to the testing of the total population at the 11th grade level. The utility of the Grade 11

test data at the district level would be enhanced by providing test data to districts on all of their Grade 11 students. Also more complete information would be available for the evaluation of the Basic Skills specific objectives of the State's Five-Year Plan that relate to 11th grade students.

Another modification in the testing program involved the concept of functional-level testing. For the past three years of the testing program, a lower level of the test than normally recommended by the publisher (off-level testing) was employed universally in Grade 7 on a statewide basis. The Fall 1975 testing results revealed that a large percentage of students in Grades 4 and 7 were scoring at or below a chance level, the level at which a student would be expected to score if the student randomly guessed the response for each item on the test. Based upon this observation, the decision was made to use functional-level testing on a school basis during the Spring 1977 testing program in Grades 3 and 6. Therefore, in many South Carolina 3rd and 6th grade schools, a lower level of the test than normally recommended by the publisher was administered, while in other 3rd and 6th grade schools the on-level test was administered.

As a result of the change from fall to spring testing and the change to functional-level testing, some difficulties in the presentation of the results for the 1976-77 Statewide Testing Program arose. For all grades, the change from fall to spring testing affects comparisons of performance of South Carolina students over the past few years. At the 3rd and 6th grade levels, additional data comparability problems have arisen from functional-level testing. Consequently, the 1976-77 Statewide Testing Program data constitutes the new baseline data for the program. The rationale and procedures for these

changes, as well as the likely effects of these changes, are described in further detail in Chapter II (Methodology).

Developments in the Statewide Testing Program from 1970-71 to 1976-77

The forerunner of the Statewide Testing Program was actually a free test scoring service which was offered by the State Department of Education to the public schools in the State. The scoring service was established in 1965-66 through the funds available under the Elementary and Secondary Education Act, Title V. Because of the many difficulties that arose with scoring a large number of tests published by many different companies, the scoring service was not offered after the Year 1969-70.

During the Year 1970-71, the groundwork for the Statewide Testing Program was laid in accordance with the federal regulations for Title III of the Elementary and Secondary Education Act. The regulation stated:

The State Plan shall set forth a program for testing students in the elementary and secondary schools of the State...which describes the means of testing, including the types of tests and grade levels of students.

The South Carolina State Plan provided for the testing of student achievement at grade levels designated by the State Department of Education. All public and certain non-public schools were included in the plan and could participate on a voluntary basis. In 1970-71, only students in Grade 4 participated in the Statewide Testing Program. The Comprehensive Tests of Basic Skills, Form Q (CTBS/Q), was administered to the universe of 4th grade students.

In order to simultaneously meet both federal and State requirements, the testing program was expanded in 1971-72 to include Grades 7, 9, and 12, as well as Grade 4. Based upon expressed district desires, information provided by various consultants, and the evaluation of the State Department of Education Committee on Testing, a plan utilizing two testing companies, California Test Bureau (CTB) and Science Research Associates (SRA), was decided upon. The CTBS/Q, which was administered to 4th and 7th grade students, and the Short Form Test of Academic Aptitude (SFTAA), which was administered to 4th grade students only, were utilized under contract with the California Test Bureau. The Iowa Tests of Educational Development (ITED), which was administered to 9th and 12th grade students, was utilized under contract with Science Research Associates. The CTBS/Q, the SFTAA, and the ITED constituted the instrumentation for both the 1971-72 and 1972-73 Statewide Testing Programs. During the years 1971-72 and 1972-73, 4th and 7th grade students were tested universally; however, only a sample of 9th and 12th grade students were tested.

In 1973-74, the decision to sample test students in Grade 11 instead of those in Grade 12 was made since there was a need to evaluate specific objectives of the State's Five-Year Plan which referenced the performance of 16-year-old students. Concurrent with this change in the populations tested was a change in instrumentation. The decision was made to replace the ITED by the CTBS, Form S (CTBS/S), for measuring the achievement levels of 9th and 11th graders. Form S of the CTBS also replaced Form Q of the CTBS in the 4th and 7th grades. Because

of the change from Form Q to Form S across all grades tested, the 1973-74 testing results became the new baseline data for the Statewide Testing Program. In that same year, off-level testing in Grades 7 and 9 was initiated on a statewide basis upon recommendation by CTB/McGraw-Hill since the average South Carolina student in the 7th and 9th grades was achieving at a level somewhat below the average student in the nation. Therefore, CTB/McGraw-Hill suggested that a lower level of the test than was normally recommended be administered statewide in Grades 7 and 9 in order to more closely approximate the achievement levels of students in these grades.

The populations tested with the CTBS/S in the 1974-75 Statewide Testing Program were the same as those tested in the 1973-74 Statewide Testing Program. For the second consecutive year, the CTBS/S was administered to students in Grades 4, 7, 9, and 11 with the SFTAA administered to students in Grade 4 only. The Student Survey and Attitude Inventory (SSAI) was incorporated as part of the 1974-75 testing program and was administered to all students in Grade 7 and a sample of students in Grades 9 and 11. The State Department of Education adopted the SSAI as a measure of self-concept which is measured by one of the subscales of this instrument.

In the 1975-76 Statewide Testing Program, 4th, 7th, and 11th grade students were tested with the CTBS/S under the guidelines for the 1974-75 testing program; however, the sample testing of 9th grade students using the CTBS/S was eliminated. The SFTAA was again administered in the 4th grade only. The only other change which occurred from

1974-75 to 1975-76 was that the SSAI was administered only to students in Grade 11 rather than to students in Grades 7, 9, and 11.

In view of the changes that have taken place over the past years in the Statewide Testing Program, the Years of 1970-71 and 1973-74 were considered baseline years. Thus, Statewide Testing Program results for Years 1970-71, 1971-72, and 1972-73 can be compared; and Statewide Testing Program results for the Years 1973-74, 1974-75, and 1975-76 can be compared. However, the Statewide Testing Program results for 1972-73 are not compatible with those for 1973-74. An incorrect comparison of results could lead to the making of incorrect interpretations about student achievement over time.

In addition to the changes in the 1976-77 Statewide Testing Program that were discussed in the preceding section entitled, "Major Changes in the 1976-77 Statewide Testing Program", there were two other developments that occurred, with respect to instrumentation. One change entailed the deletion of the administration of the SSAI as part of the testing program. The second change was the elimination of the administration of the SFTAA from this year's testing primarily because of funding problems caused by testing the universe of 11th grade students.

CHAPTER II

METHODOLOGY

Introduction

The purpose of this chapter is to discuss the methodology and procedures used in the implementation of the 1976-77 South Carolina Statewide Testing Program. The chapter is divided into five sections. The first section, "Participation," presents the procedures for determining which students were eligible to be tested as part of the Statewide Testing Program and the numbers of students tested at each of the three grade levels. The second section, "Instrumentation," describes each of the levels of the Comprehensive Tests of Basic Skills, Form S (CTBS/S), administered to South Carolina students. The rationale and development of criteria for the functional-level testing approach are also discussed in the second section. An overview of the major activities involved in the Statewide Testing Program is provided in the third section, "Procedures". In the fourth section, "Data Analyses," the procedures utilized in analyzing the CTBS/S data are discussed. The fifth section, "Limitations on the Interpretation of Test Results," considers problems associated with interpretation of the CTBS/S results.

Participation

The target populations for the 1976-77 South Carolina Statewide Testing Program were the universe of South Carolina's students in

Grades 3, 6, and 11. District participation in the Statewide Testing Program was on a voluntary basis. Therefore, all 3rd, 6th, and 11th grade students who were enrolled in the public school districts that elected to participate in the testing program were eligible to be tested as part of the testing program. Eighty-nine of the 92 South Carolina school districts participated in the Statewide Testing Program at all three grade levels. Of these 89 districts that participated at all three grade levels, one school in one district elected not to participate at the 3rd and 6th grade levels; and one school in a second district elected not to participate at the 11th grade level. Of the three districts that did not participate at all three grade levels, one district elected not to participate at any grade level; while, one district participated at the 11th grade level only; and another district participated only at the 3rd and 6th grade levels.

A total of 126,902 South Carolina 3rd, 6th, and 11th graders were tested as part of the 1976-77 Statewide Testing Program. At the 3rd grade level, a total of 41,660 students were tested. Level C of the CTBS/S was administered to 13,868 (33.3%) of the 3rd graders, and Level I of the CTBS/S was administered to 27,792 (66.7%) of the 3rd graders. At the 6th grade level, a total of 47,971 students were tested. Level I of the CTBS/S was administered to 11,660 (24.3%) of the 6th graders, and Level II of the CTBS/S was administered to 36,311 (75.7%) of the 6th graders. In the 11th grade, a total of 37,271 students were administered Level IV of the CTBS/S. Students enrolled in programs for the handicapped, including those in self-contained, resource, or itinerant models, were excluded from the Statewide Testing Program.

However, students in speech handicapped programs could participate if these students were not also enrolled in another program for the handicapped.

Instrumentation

Use of the Comprehensive Tests of Basic Skills, Form S (CTBS/S), published by CTB/McGraw-Hill, was continued in the Spring 1977 Statewide Testing Program. The CTBS/S was administered to measure student achievement in the basic skill areas of Reading, Mathematics, Language, Reference Skills, Science, and Social Studies. Levels C and I of the CTBS/S were administered in Grade 3 on a school basis; Levels I and II of the CTBS/S were administered in Grade 6 on a school basis; and Level IV of the CTBS/S was administered universally in Grade 11. The administration of two different levels of the test in Grades 3 and 6 on a school basis was a consequence of the implementation of functional-level testing. In the Spring 1977 Statewide Testing Program, functional-level testing was not utilized in Grade 11 since only Level IV of the CTBS/S was administered. The descriptions of Levels C, I, II, and IV of the CTBS/S precede the discussion of the rationale and development of criteria for functional-level testing.

Description of the Comprehensive Tests of Basic Skills

The Comprehensive Tests of Basic Skills, Form S (CTBS/S), is a nationally standardized norm-referenced test designed to measure student achievement in the basic skills. (For an explanation of norm-

referenced test interpretation, refer to Chapter III.)

Level C of the CTBS/S is designed to provide five basic skill area scores (Reading Total, Language Total, Mathematics Total, Science, and Social Studies) and a Battery Total score. Whereas, Levels I, II, and IV are designed to provide six skill area scores (Reading Total, Language Total, Mathematics Total, Reference Skills, Science, and Social Studies) and a Battery Total score. Note that, in addition to the five basic skill areas on Level C, Levels I, II, and IV also include the basic skill area of Reference Skills.

For all four levels of the CTBS/S, the Reading, Language, and the Mathematics Tests are combined to produce the Battery Total score. In computing the Battery Total score, all of the items on the Reading, Language, and Mathematics Tests are pooled; and a score is generated from this new set of items. Additionally, only the scores of students who completed all parts of the Reading, Language, and Mathematics Tests are included in the Battery Total score. Consequently, the Battery Total score may actually be lower than the average of the Reading Total score, Language Total score, and Mathematics Total score and lower than any one of these individual total scores.

The three skill areas (Reading, Language, and Mathematics) that contribute to the Battery Total score are the only skill areas that are composed of subskill areas or subtests. Additionally, the subtests for Level C differ from the subtests for Levels I, II, and IV.

The Reading Total score for Level C is a composite score of three subtests; whereas, the Reading Total score for Levels I, II, and IV is

a composite score of two subtests. The Reading Total score for Level C is derived on the basis of all items on Reading Vocabulary, Reading Comprehension (Sentences), and Reading Comprehension (Passages) Subtests. The Reading Total score for Levels I, II, and IV is derived on the basis of all items on the Reading Vocabulary and Reading Comprehension Subtests.

The Language Total score for all levels is derived on the basis of all items on the Language Mechanics, Language Expression, and Spelling Subtests.

The Mathematics Total score for Level C is a composite of two subtest scores, one for Mathematics Computation and one for Mathematics Concepts and Applications combined. However, the Mathematics Total score for Levels I, II, and IV is derived from items on the three subtests Mathematics Computation, Mathematics Concepts, and Mathematics Applications.

The items included on each of the subtests of the CTBS/S were developed to measure both subject area content and thinking processes. Since curricular content varies from state to state, the subject area content tested on the various subtests is general in nature rather than specific. Additionally, each content area is measured at one or more thinking process levels. Thus, the items are designed to assess not only what the student knows but also at what level the student can deal with what he knows.

Following are the definitions of the five thinking process areas which are used in classifying content on the CTBS/S:

1. Recognition: the ability to recognize or recall information;
2. Translation: the ability to translate or convert concepts from one form of language (verbal or symbolic) to another;
3. Interpretation: the ability to comprehend ideas and the relationships and interrelationships of these ideas.
4. Application: the ability to apply techniques, including performing fundamental operations; and
5. Analysis: the ability to extend interpretation beyond the stated information.

(Consult the CTBS/S Expanded Edition, Test Coordinators Handbook, for the complete rationale and the content/process classification of each item included on the various subtests of the CTBS/S.) The content and thinking process areas measured by the various subtests of the CTBS/S are described in the ensuing discussion.

Reading (Level C): The Reading Vocabulary Subtest requires the student to select the word that matches the definition read by the test administrator. The Reading Comprehension (Sentences) Subtest requires the student to select the word that semantically and syntactically best completes a sentence. In the Reading Comprehension (Passages) Subtest, the students are presented with six brief passages or letters and are asked questions that measure specific skills, including literal recall, rewording of details, using context clues to answer questions, stating the main idea, and interpreting a story to reach a conclusion.

Reading (Levels I, II, and IV): The Reading Vocabulary Subtest

requires the student to select a synonym for a word or words presented in the context of a sentence or passage. The Reading Comprehension Subtest requires the student to read passages, letters, poems, and articles and to answer questions measuring literal recall, identification of main ideas, ability to draw conclusions, and other reading skills.

Language (All Levels): The Language Mechanics Subtest measures student skills in capitalization and in punctuation. The Language Expression Subtest measures various aspects of effective expression such as standard English usage, diction, and organizational skills. The Spelling Subtest measures the ability of the student to recognize correctly and incorrectly spelled words in sentence context.

Mathematics (Level C): The Mathematics Computation Subtest measures the ability of the student to add, subtract, multiply, and divide. The Mathematics Concepts and Applications Subtest measures skills related to operations with numbers, numeration, measurement, and fractions. Problem solving is measured by reading aloud the problem to the student who then selects the appropriate response from among the choices given.

Mathematics (Levels I, II, and IV): The Mathematics Computation Subtest requires the student to add, subtract, multiply, and divide. The Mathematics Concepts and Applications Subtest measures the student's ability to recognize or apply appropriate concepts and techniques and the ability to solve problems, respectively.

Reference Skills (Levels I, II, and IV): The Reference Skills

Subtest contains items which measure the ability to use reference materials and follow library procedures. More specifically, these items require the ability to use information on catalogue cards, the ability to use dictionary conventions, and the ability to identify various parts of a book and the functions of these parts.

Science (All Levels): The Science Subtest is comprised of items which assess the student's ability to investigate problems in science and, to a lesser degree, to recall scientific facts or concepts. Investigative skills measured are the abilities to classify objects or phenomena, to measure or quantify data, to recognize a trend in data, to predict the outcome of a trend in data, to recognize a valid hypothesis drawn from data presented, and to analyze an experimental design. The student demonstrates these skills by interacting with data presented in charts, diagrams, drawings, graphs, and written passages. The items are distributed across the various content areas of the physical and life sciences.

Social Studies (All Levels): The Social Studies Subtest contains items which measure the student's grasp of concepts, generalizations, and inquiry skills necessary for effective problem solving in social studies. The social studies skills tested draw from four content areas: the physical environment, the social environment, the political/economic environment, and history. The student is required to recall specific information, to read maps and other graphic material, to select and evaluate research designs, to distinguish fact from opinion, and to employ formal logic in problem solving.

Rationale and Development of Criteria for Functional-Level Testing

For purposes of the 1976-77 Statewide Testing Program, functional-level testing was defined as administering on a school basis a lower level of the CTBS/S than the level normally recommended by the publisher. The decision to implement functional-level testing in Grades 3 and 6 was made as a result of reviewing the Fall 1975 CTBS/S data for Grades 4 and 7. In the Fall 1975 testing program, Levels I and II of the CTBS/S were administered universally in Grades 4 and 7, respectively. Level I is the level of the test normally recommended by the publisher for use in Grade 4, and Level II is a lower level of the test than the level normally recommended by the publisher for use in Grade 7. However, the Fall 1975 test results indicated that large percentages of 4th and 7th graders were scoring at or below a chance level. A probable reason for this phenomenon was that the levels utilized were too difficult for a large number of South Carolina 4th and 7th grade students and, hence, were providing very little information on student achievement. This observation suggested that in order for meaningful measurement to be obtained on 3rd and 6th graders, the utilization of levels of the test more compatible with the abilities of the students was necessary.

The norming procedures used in the standardization of the CTBS/S made functional-level testing possible. In norming each of the seven levels of the CTBS/S, the test publisher overlapped the grades so that each test level could be used for a range of grades. For example, Level I was normed for students in the 2nd, 3rd, and 4th grades; and

Level II, the next level with respect to difficulty, was normed for students in the 4th, 5th, and 6th grades. Therefore, although some 4th graders might find Level II somewhat difficult while other 4th graders might find Level I easy, either level of the test could be administered to 4th grade students. In either case, the performance of 4th grade students in some local group could be compared directly to the performance of the 4th grade students in the national sample.

Level I of the CTBS/S was designed and standardized for students in Grades 2.5 to 4.9 and is the level of the CTBS/S normally recommended by the test publisher for use in Grade 3. In fact, Level I is the only level of the CTBS/S for which 3rd grade norms are provided. Although Level C is normally recommended for use in Grades 1 and 2, the test publisher recommended the use of Level C as the functional-level test for Grade 3. Since Level C was not normed for 3rd graders, special methods for developing derived scores from raw scores were necessary for reporting these results. (See the "Limitations on Interpretation of Test Results Section" of this Chapter.)

For use at the 6th grade level, the test publishers developed Level II, which was normed for Grades 4.5 to 6.9, and Level III, which was normed for Grades 6.5 to 8.9. In the past, Level II (the off-level test for Grade 7) was used universally in Grade 7 as part of the Statewide Testing Program. However, even with the implementation of the off-level testing approach in Grade 7, the Fall 1975 test results still indicated that a large percentage of 7th graders were scoring at or below the chance level, the score a student is expected to

obtain by guessing alone. Therefore, the test publisher recommended the use of Level I as the functional-level test for the 6th grade population.

The fact that some 3rd and 6th graders were to be tested with the functional-level test necessitated the development of criteria and procedures for identifying which schools should administer Level C instead of Level I in Grade 3 and which schools should administer Level I instead of Level II in Grade 6. Naturally, the best way to identify students for functional-level testing would be either to select low achieving students or to select groups of low achieving students within a school to take the functional-level test. However, neither of these approaches was deemed feasible because of logistical problems associated with test administration. Therefore, the school, rather than the individual student or a student group within a school, was used as the classification unit for functional-level testing.

Based upon the results of the Fall 1975 4th grade test data, each 3rd grade school participating in the 1976-77 Statewide Testing Program was recommended to administer Level C or Level I. Based upon the results of the Fall 1975 7th grade test data, each 6th grade school participating in the 1976-77 Statewide Testing Program was recommended to administer Level I or Level II. The criteria for recommending the test level for those 3rd and 6th grade schools follow:

1. In Grade 3, a school whose 1975 4th grade mean grade equivalent for the Battery Total was 3.1 or less should administer

Level C of the CTBS/S to its 3rd grade students. Therefore, a school whose 1975 4th grade mean grade equivalent for the Battery Total was greater than 3.1 should administer Level I of the CTBS/S to its 3rd grade students.

2. In Grade 6, a school whose 1975 7th grade mean grade equivalent for the Battery Total was 5.1 or less should administer Level I of the CTBS/S to its 6th grade students. Therefore, a school whose 1975 7th grade mean grade equivalent for the Battery Total was greater than 5.1 should administer Level II of the CTBS/S to its 6th grade students.

According to these criteria, the Office of Research made a recommendation to each district with respect to the level of the CTBS/S that should be administered in each school at each grade level. Districts either concurred with this recommendation or deviated from this recommendation because of additional district information not available to the Office of Research. Then, depending on the classification agreed upon by the district and the Office of Research, all students in the school at the appropriate grade level (3rd or 6th) were administered the functional-level or on-level test.

Procedures

The successful operation of the Statewide Testing Program is contingent upon the successful implementation of several major activities. The State Department of Education through the Educational Assessment Section, Office of Research, was responsible for coordinating the

Statewide Testing Program at the State level, while the District Test Coordinator was responsible for coordinating the Statewide Testing Program at the local level.

The first major activity of the 1976-77 Statewide Testing Program involved conducting four regional workshops on functional-level testing in October, 1976. The purpose of these workshops was to explain the concept of functional-level testing and the changes in testing program procedures that would result from the implementation of the functional-level testing approach in the Statewide Testing Program. This information was utilized by districts in planning local testing programs and in deciding on district participation in the 1976-77 Statewide Testing Program. Office of Research recommendations concerning the levels of the CTBS/S to be administered at the various 3rd and 6th grade schools within each district were confirmed, and any conflicts in levels recommended were resolved. Each district also provided enrollment figures for each 3rd and 6th grade school participating in the testing program in the district.

The Office of Research submitted the materials order to CTB/McGraw-Hill in December, 1976. School enrollments provided by districts for the 3rd, 6th, and 11th grades and an inventory of test materials stored at the State Department of Education were used in estimating the CTBS/S materials order for each district. The Office of Research provided CTB/McGraw-Hill with the materials order for each district by test level. CTB/McGraw-Hill was then responsible for shipping the appropriate test materials to each district by March, 1977.

Six regional Pretest Workshops were conducted in March, 1977, for the purpose of explaining details of the test administration to the District Test Coordinators. Workshop handouts developed by the Office of Research included a District Test Coordinator's Packet, a Classroom Test Administrator's Packet for the 3rd and 6th grades, and a Classroom Test Administrator's Packet for the 11th grade. Additionally, all handouts included student participation information, a time line and checklist for the 1976-77 Statewide Testing Program, administration procedures, coding instructions and editing procedures for answer sheets and test booklets, and coding instructions and editing procedures for CTBS/S Group Information Sheets. The District Test Coordinator's Packet also included information on packaging of test booklets and answer sheets, shipping of test booklets, storage of reusable test materials, and additional scoring services that the district could purchase. A video tape developed by Office of Research staff prior to the Pretest Workshops was shown at the workshops to explain standardized testing procedures. The video tape was scheduled for open and closed circuit airings throughout the State by the Instructional Television Network so the districts could utilize the film in their local district workshops.

Districts were given a choice of administering the CTBS/S to their 3rd, 6th, and 11th grade students on either March 29, 30, and 31, 1977, or April 5, 6, and 7, 1977. The actual administration of the tests to the students was conducted by classroom teachers, using the administration procedures outlined in the CTBS/S Examiner's Manuals for

Levels C, I, II, and IV.

Immediately after the administration of the CTBS/S, the District Test Coordinators collected the consumable test booklets and answer sheets from the various schools within the district. The deadline for the shipment of these test booklets and answer sheets to CTB/McGraw-Hill in Monterey, California, was April 13, 1977. CTB/McGraw-Hill arranged for a shipper to pick up these materials within each district. Score reports ordered by the Department for each district were generated and sent directly to each district in May, 1977. For each grade tested, the following reports were ordered:

1. Individual Test Records,
2. Class Record Sheets,
3. School Right Response Summaries for each level of the test,
4. District Right Response Summaries for each level of the test,
5. School Frequency Distributions,
6. District Frequency Distributions, and
7. Evaluator's Summaries.

State reports which paralleled district reports in content and format were sent directly to the Department.

The Posttest Workshops for District Test Coordinators were conducted during the time period between shipment of the materials for scoring and district receipt of the score reports. At these workshops, District Test Coordinators attended a general session on the definitions and conversions of the test scores. The District Test Coordinators were also given the option of attending a session on reading the score

reports or a session on utilization of the test results. The handouts utilized at the Posttest Workshops were developed by the Educational Assessment Section staff.

Limitations on Interpretation of Test Results

The 1976-77 Statewide Testing Program embodied two major changes that could possibly affect the test results and, thereby, place limitations on the interpretation of the data. These two changes were the move from fall testing in 1975 to spring testing in 1977 and the implementation of functional-level testing in Grades 3 and 6. For all grades tested, the change from fall to spring testing affects comparisons of the 1976-77 performance of South Carolina students with the performance of South Carolina students in the years 1973-74, 1974-75, and 1975-76. In addition to affecting the comparison of this year's test data with previous years data, the move to functional-level testing in Grades 3 and 6 resulted in problems associated with comparing data for the various subtests on the two levels used in each grade. The possibility exists that the change in administration dates and the change to functional-level testing may have opposing effects on the data. Therefore, although both changes tend to provide a more accurate picture of the performance of South Carolina students, both changes contribute to the lack of comparability between the Spring 1977 data and the Fall data from 1973, 1974, and 1975. A discussion of the possible effects that the change in administration dates and the change to functional-level testing may have had on the Spring 1977 data is presented in this section.

Limitations as a Result of the Change of Administration Dates

The effect on test data caused by the change from fall to spring testing independent of the effects of functional-level testing is not easy to discern. Since CTB/McGraw-Hill only gathered normative data in the spring of the year, CTB/McGraw-Hill employed linear interpolation in order to develop fall norms. The assumption underlying linear interpolation is that scores increase at a constant rate during the school year (9 months) and increase one month during the summer vacation period. Consequently, if student achievement does not increase over the summer months, the 1975 Fall State results appear lower than the results actually are. The reason for this phenomenon is that the national interpolated norms, which assume a constant achievement increase over the summer months, overestimated the achievement students should manifest in the fall. However, since the 1977 Statewide Testing Program employed a spring testing date which coincided with the development of national norms, error resulting from interpolation does not exist in making comparisons of the 1977 Spring Statewide Testing Program data to the national normative data.

For example, when Fall 1975 national percentiles for Grade 4 are compared to Spring 1977 national percentiles for Grade 3, the fall national percentiles have been derived from interpolated norms; whereas, the 1977 national percentiles have not required interpolation in their derivation. Thus, the Fall 1975 national percentiles may appear lower than the Spring 1977 national percentiles because of the error induced in the fall norms by interpolation. Because the magnitude of this error is uncertain, the Fall 1975 Statewide Testing Program results should not

be compared to the Spring 1977 Statewide Testing Program results.

Limitations as a Result of Functional-Level Testing

As in the case of attempting to assess the effects of the change in administration dates, assessing the effects of functional-level testing independent of the effects of the move to spring testing is also a difficult task. Functional-level testing embodied the philosophy of testing students in Grades 3 and 6 with a level of the CTBS/S that more closely approximated the achievement level of the students since a floor effect was suspected to have existed in the results from past testing in Grades 4 and 7.

The lowest derived score that can be obtained by a student on a particular level of the test is usually referred to as the floor of the test. A floor effect occurs when a large number of students score at the lower limits of the test because the students cannot score any lower. A floor effect was suspected in the Fall 1975 test results for Grades 4 and 7 since large percentages of 4th and 7th graders were scoring in the lower quarter of the national distribution. Thus, when a floor effect is evidenced for a particular level of the test, derived scores (such as scale scores, grade equivalents, and national percentiles) are superficially high because students scoring the lowest derived score on a particular level of the test in reality would have scored even lower. In other words, students scoring at the floor of a particular level were taking a level of the test that was too difficult for them. A student who took a functional-level test should respond

correctly to more test items than if the same student had taken the on-level test in Grade 3 or in Grade 6. However, although the student's raw score on the functional-level test appears higher, the scores derived from the raw score will actually be lower than if he took the on-level test since the functional-level test has a lower floor. Thus, even though a student's raw score on a functional level test is a more accurate reflection of his achievement level, combined results for the functional-level and on-level tests for a given grade may actually appear to have declined from previous years' testing results.

On the other hand, the implementation of functional-level testing involved the possibility of ceiling effects in the test results. A ceiling effect occurs when a test is too easy for a group of students, thereby, resulting in a large number of students scoring at or near the maximum score on a test. Since functional-level testing was implemented on a school by school basis, ceiling effects were considered as a potential problem in the test results. Ceiling effects could occur as the result of testing the higher achieving students in the schools designated as functional-level schools with a test that was too easy for these students; therefore, these students could score at or near the maximum score on the functional-level test. If ceiling effects were found in the test results for the State as a whole, then the measured performance of South Carolina's students would appear to be lower than the true performance of the State's students.

The utilization of two different levels of the CTBS/S in Grades 3 and 6 brought about by the functional-level testing concept also posed

a data aggregation problem at the district level. Since normative data for Level C and Level I (the two functional-level tests) did not exist for Grades 3 and 6, respectively, a special procedure had to be used in order to combine the data for Levels C and I at the 3rd grade level and Levels I and II at the 6th grade level. Scale scores, which are derived from raw scores, provide a means by which test results on Level C can be combined with those on Level I and test results on Level I can be combined with those on Level II. This procedure, however, could only be applied to those subtests which were equivalent across levels in terms of content and thinking process areas.

At the 6th grade level, all subtests of Levels I and II were comparable. The subtests of Level I were measuring the same content and process areas as Level II, only at a less difficult level. Thus, there were no problems in using the converting procedure for combining the 6th grade Level I and Level II data.

At the 3rd grade level, all subtests for Levels C and I were not comparable, that is, the content and process areas measured on the two levels were not perfectly matched. The compatibility between the Reading Comprehension Subtests for these two levels was not sufficient to warrant combining the data for these subtests in the 3rd grade. The same was also true of the Mathematics Concepts and Applications Subtests of Levels C and I. Nevertheless, Reading Total and Mathematics Total were considered to be equivalent between the two levels in that the large number of items contained in these two subtests were assumed to provide equivalent measures of "reading achievement" and "mathematics

achievement". Since Level C does not include a Reference Skills Subtest, combined Levels C and Level I test results are not available for this subtest.

Thus, in addition to the change in administration dates and the functional-level data aggregation problems, the lack of comparability of subtests in Grade 3 also contributed to the problems involved in making comparisons between the 1976-77 test data and the previous years' test data.

CHAPTER III

INTERPRETATION OF THE TEST SCORES AND SCORE REPORTS

Introduction

An essential facet of any testing program in order for the program to be of value to State, district, and local personnel is understanding the information that is generated from such a program. Therefore, this chapter is designed to facilitate the interpretation of the test scores and score reports that are provided to the participants in the Statewide Testing Program. The first section of this chapter, "Norm-Referenced Test Interpretation," describes how a norm-referenced test is constructed and how the results from a norm-referenced test can aid in the educational decision-making process. The second section, "Definitions of the Various Test Scores," provides descriptions of the test scores such as raw scores, scale scores, percentiles, and normal curve equivalents and discusses the strengths and weaknesses of these test scores. A discussion of the score reports that are provided as part of the Statewide Testing Program is included in the third section, "Description of Score Reports". Also provided in the third section is information relative to the types of test scores provided on each score report.

Norm-Referenced Test Interpretation

Before any test data can be interpreted properly, the purpose underlying the design and construction of the test must be known.

The Comprehensive Tests of Basic Skills, Form S (CTBS/S), was constructed and designed as a norm-referenced achievement test. A norm-referenced achievement test is primarily designed to rank students on achievement from low to high so that the achievement of individual students can be interpreted with respect to the achievement of some reference group, known as the norm group. For example, suppose Sally Student received a score of 8 items correct on a 10-item test; and her class's average score was 5 items correct. A norm-referenced interpretation would be: Sally's test performance was above average relative to her class's average performance. In other words, Sally's performance is being interpreted relative to the class's performance. In this example, the "norm group" would be the class. In the case of the CTBS/S, the norm group consists of a national sample of students selected from a sample of public, private, and parochial schools within 50 states (including the District of Columbia). In order to insure a representative cross section of students in the national sample, school districts were selected based upon district size, type of community served (rural or urban), and racial composition. Thus, in the comparison of individual CTBS/S scores or some local group of student scores to the national norm group, a precise description of the composition of the norm group is necessary. In the analyses of this year's test data, the composition of the national sample is taken into account since the characteristics of the students in the national sample vary from the characteristics of students in South Carolina (see Chapter IV).

Since the CTBS/S was primarily designed to rank students on achievement from low to high, the CTBS/S was constructed so that individual differences in student achievement would be maximized. To obtain a wide range of scores, the items selected for inclusion on the CTBS/S vary in difficulty. The majority of the items are of medium difficulty, and the remaining items are either easier or more difficult. Items which all students are likely to answer correctly and items which all students are likely to answer incorrectly were not included on the CTBS/S.

By virtue of the fact that the CTBS/S was designed to maximize individual differences in student achievement, the CTBS/S results can be used to assist educational decision makers in answering questions such as the following:

1. How does the achievement of an individual student in a given grade compare with the achievement of other students at the same grade level in his class, in the school, in the district, in the state, or in the nation?;
2. How does the achievement of a class compare with the achievement of other classes in the school, with the achievement of the school as a whole, with the achievement of the district as a whole, with the achievement of the state as a whole, or with the achievement of the nation as a whole?;
3. How does the achievement of a school in a given grade compare with the achievement of other schools within the district as a whole, achievement of the state as a whole, or achievement of the nation as a whole?;

4. How does the achievement of the district in a given grade compare with the achievement of the state as a whole or the achievement of the nation as a whole?; and
5. Of the content and skill areas included on the CTBS/S, in which content or skill area is achievement weakest (strongest) relative to some norm group?.

In using the CTBS/S results or any other test results to answer questions similar to the ones above, the educational decision maker must be knowledgeable not only about the characteristics of the comparison group but also about the extent to which the test content measures the curriculum under consideration. The latter issue is considered in Chapter V in which the results of the content validation are reported.

Definitions of Test Scores

The results of the Statewide Testing Program are reported in raw scores, scale scores, percentiles, stanines, grade equivalents, and normal curve equivalents. These test scores serve a variety of different purposes with respect to the interpretation of the CTBS/S results. The definitions of the test scores and the strengths and weaknesses of these scores are described in this chapter. Two measures of central tendency, the mean and the median, are often calculated on the basis of these different scores to describe test data. Therefore, a discussion of the mean and the median as measures of central tendency precedes the discussion of the various test scores.

Measures of Central Tendency

A convenient way of summarizing data is to find a single score that can represent a whole set of test scores. A desirable characteristic of such a score is that the score reflects the point around which the majority of the test scores tend to cluster. This point is referred to as the point of central tendency. There are two main measures of central tendency, the mean and median.

The mean is typically referred to as the "average" score and is computed by adding a list of scores then dividing by the total number of scores. For example, if the seven students in Ms. Central's class score 1, 1, 1, 2, 3, 10, and 10 on a 10-item test, then the mean class score is found by adding the seven scores together ($1 + 1 + 1 + 2 + 3 + 10 + 10 = 28$) and dividing this sum (28) by the number of students who took the test ($28 \div 7 = 4$). Therefore, the mean score for Ms. Central's class is 4.

The median is another measure of central tendency that is frequently used. The median is determined by ranking the test scores from low to high then finding the score that is in the middle. In other words, the median is the midpoint in a distribution of scores below which half (50%) of the scores lie. Thus, the other half (50%) of the scores will be above this point. Again, look at Ms. Central's class scores of 1, 1, 1, 2, 3, 10, and 10 on the 10-item test. Which of these scores is the middle score? The middle score or midpoint is the fourth score from the top or bottom which is 2. Therefore, the median of the test scores for Ms. Central's class is 2.

Since both the mean and median are measures of central tendency for a group of scores, the question arises, "Is the mean or median a more accurate indicator of what a group of scores looks like?". Again, look at the student scores in Ms. Central's class which were 1, 1, 1, 2, 3, 10, and 10. Does the mean of 4 or the median of 2 seem to represent more accurately the way in which the class as a whole scored? In this example, the median of 2 is more representative of the scores in Ms. Central's class than the mean of 4. In general, if scores are bunched at the top or bottom of the range of scores, the median is more representative of the group of scores.

When comparisons between classes, districts, or states are being made, either all means or all medians should be used for the comparisons. For example, mean class scores should not be compared to median class scores.

Raw Scores

The raw score is the number of items on a test that the student answered correctly. Thus, if Sally Student obtained a raw score of 10, then Sally answered 10 items on the test correctly.

All other types of scores used in testing are derived from the raw score. The major weakness of this score is that without additional information this score is impossible to interpret. For example, having a raw score of 10 is relatively meaningless unless the total number of items on the test is known.

Scale Score

A scale score is a score which ranges from 0 - 999, depending upon the subtest and level of the test being used. This score has been statistically derived from the distribution of raw scores.

A scale score is primarily used to observe a student's or group of students' performance on a particular subtest over time. In other words, Sally's Reading Comprehension scale score in 1973 can be compared with her Reading Comprehension scale score in 1977. However, scale scores should not be used to compare a student's performance between subtests. For example, Sally's Reading Comprehension scale score should not be compared to her Reading Vocabulary scale score.

Although the mathematical properties of the scale score make this score especially suitable for statistical calculations, a scale score must be converted to another score to be meaningful and of practical use.

Percentile

The point in a distribution below which a given percentage of scores fall is called a percentile (%ile). Suppose Sally Student scores at the 63rd percentile (63%ile) on a test. The interpretation of this score would be: sixty-three (63) percent of the scores in the norm group were below Sally's score, while thirty-seven (37) percent of the scores in the norm group were above Sally's score. In other words, Sally scored higher than 63% of the students in the norm group and lower than 37% of the students in the norm group.

The distinction between a local percentile and a national percentile is based on the norm group. If the norm group is a local group such as a class, school, district, or state peer group, then the student's percentile refers to the student's rank among peers in the local group. If the norm group is a national group, then the student's percentile refers to the student's rank among peers in the national group. Suppose Sally Student has a school local percentile of 75 and national percentile of 63. Then, Sally scored higher than 75% of her peers in her school and 63% of her peers in the nation. Note that Sally's national percentile varied from her local percentile because her score was compared to two separate norm groups.

Frequently, the range of percentile points is divided into four subgroups, referred to as "quarters of the national distribution". These quarters are referred to as the lower quarter (1st to 25th percentile), the lower middle quarter (26th to 50th percentile), the upper middle quarter (51st to 75th percentile), and the upper quarter (76th to 99th percentile). The percentage of students that have national percentiles falling into each of these four quarters is useful in making comparisons between local and national distributions. In the national distribution, twenty-five percent of the students' scores falls into each of the four quarters. Therefore, if a local group has 35% of its scores falling into the lower quarter of the national distribution, this indicates that the local group's performance is below the national norm for the lower quarter. Likewise,

if a local group has 15% of its scores falling into the lower quarter, this indicates that the local group's performance is above the national norm for that quarter.

When 25% of the students tested in a given group fall in each of the four quarters of the national distribution, there is a strong tendency for educators to accept this performance as an end in itself. Consider the possibility that the percentage of South Carolina students falling into each quarter is 25%. In other words, South Carolina's students would look like the students in the national sample; nevertheless, educators should still be interested in implementing programs to improve student performance so that the percentages of students falling into the lower quarters would be reduced and the percentages of students falling into the upper quarters would be increased.

Percentiles are useful in making comparisons between different groups of students on the same subtest or in making comparisons for the same group of students across various subtests. For a given grade, the median national percentile in Reading Vocabulary for a class can be compared to the median national percentile in Reading Vocabulary for the school to determine the class's performance relative to the school's. Another approach would be to compare the median national percentiles for Reading Total, Language Total, and Mathematics Total to determine which of these areas seems to be weak relative to the other areas.

The major weakness of the percentile is that this score may fluctuate as a function of the raw score. For example, raw scores of 32

and 33 for Reading Comprehension, Level I, Grade 3.6 to 3.9, convert to percentiles of 62 and 64 respectively; whereas, raw scores of 36 and 37 convert to percentiles of 73 and 77, respectively. An increase in one raw score point in one place on the scale results in an increase of two percentiles and in another place on the scale results in an increase of four percentiles. Thus, on a given subtest, a student can increase his ranking by several percentile points by guessing one item correctly. For this reason, the conversion tables located in the CTBS/S Examiner's Manual should be consulted when making discriminations in performance between individual students or between groups of students.

Stanines

The stanine derived from a "standard nine" score consists of a nine point scale based on percentiles. The scores range from a low value of 1 to a high value of 9, with 5 as an average value. Each value for the stanine represents a group of percentiles. The ranges of the percentiles associated with each stanine score are presented in Figure 3.1.

Because of this score's simple structure, this score is especially good to use in the interpretation of individual student data. As a rule of thumb, if a stanine score is at least two stanines above the average stanine score of 5 in a particular area (Reading, Language, Mathematics, etc.), this score is an indication of a strength in that area relative to the norm group. On the other hand, if a stanine score is at least two stanines below the average stanine score of 5 in

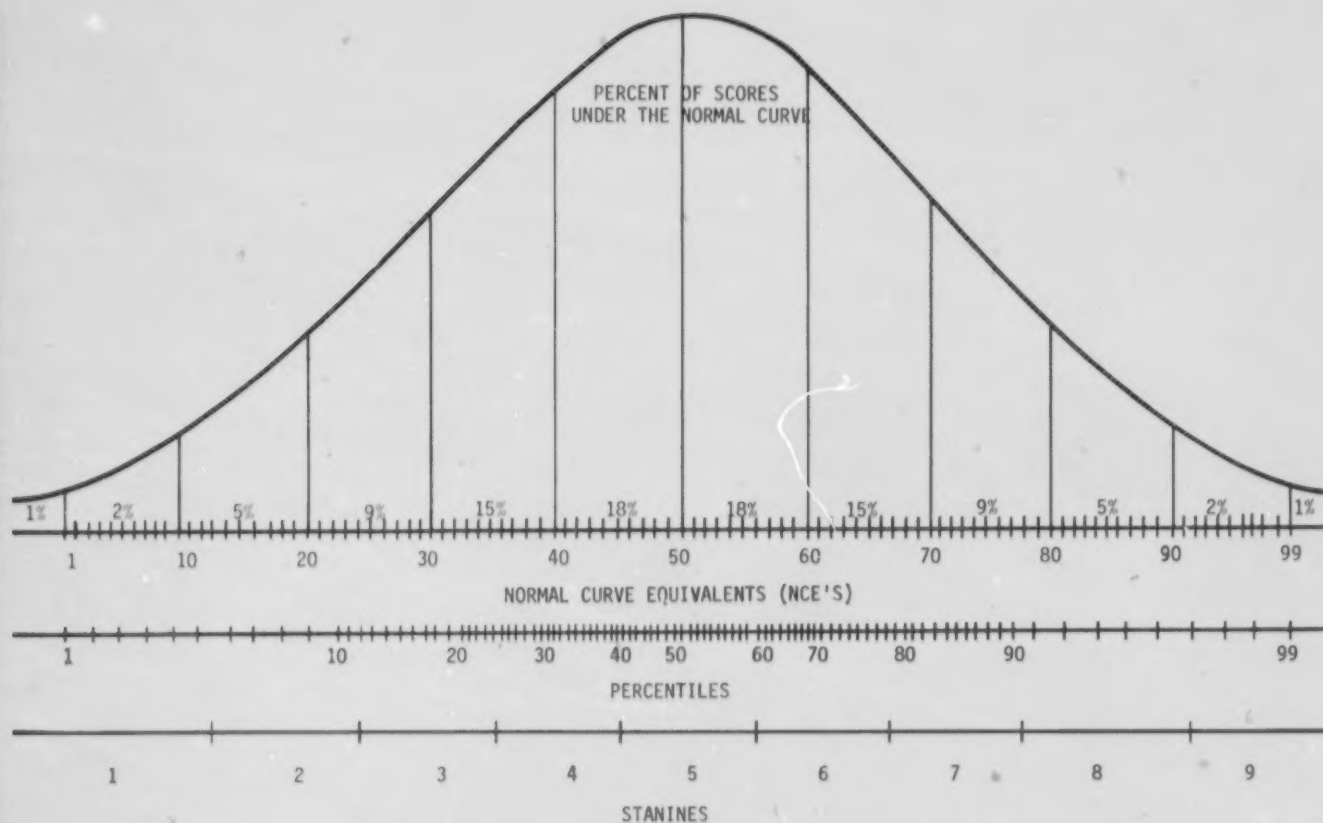


Figure 3.1
Scales of National Percentiles, Stanines,
and Normal Curve Equivalents

a particular area, this score is an indication of a weakness in that area relative to the norm group. For example, if Sally Student's stanine score is 8 in Mathematics Computation, her performance is considerably above the average of the comparison group since her percentile would fall between 90 and 95. Furthermore, her stanine score of 8 also indicates that she is strong in Mathematics Computation relative to the performance of students in the comparison group in Mathematics Computation. Suppose, however, that her stanine score in Mathematics Computation is 2. This score of 2 indicates that her performance is considerably below average since her percentile would fall between 5 and 10. Sally's score of 2 also means that she is weak in Mathematics Computation relative to the performance of students in the comparison group in Mathematics Computation.

Since a stanine score is a range of percentiles, this score is a very stable indicator of achievement. Inherent in this score is the fact that scores should be interpreted within an interval of confidence. Since many factors such as test anxiety, the test situation, and guessing can affect a student's score on a test, a student's score on a test can fluctuate from one testing time to another. Therefore, interpreting a student's score within a confidence band more accurately allows for this fluctuation than relying on the student's test score in a single situation. For example, if Sally Student's stanine score is 4, her teacher can be fairly confident that Sally's performance is near average.

Stanines are based on either local percentiles or national

percentiles. A stanine score based on national percentiles is referred to as a "national stanine"; whereas, a stanine score based on local percentiles is referred to as a "local stanine".

Grade Equivalents

Grade equivalents are expressed in two numbers: the first indicates the year, and the second indicates the month. Sally's score of 3.7 indicates that her achievement was similar to the median achievement of 3rd grade students in the national sample in April (7th month).

Interpreting the grade equivalent as grade performance is incorrect. If Sally obtains a score of 5.7 in mathematics in the Spring in Grade 3 on Level I of the CTBS/S, the result should be interpreted as Sally is doing exceptionally well compared to other 3rd graders. Sally's score does not mean that Sally can currently do 5th grade mathematics because Sally only took a 3rd grade test. In other words, even though Level I was constructed for use in Grades 2.5 to 4.9, Sally's test results were compared with the test results of 3rd grade students in the national sample. Since the grade equivalent is subject to widespread misinterpretation, the meaning of a grade equivalent should be carefully explained to individuals who use the test data, for example, principals, teachers, and parents.

This score is useful in making comparisons between different groups of students on the same subtest. For example, the median grade equivalent in Reading Vocabulary for a class can be compared to the median grade equivalent in Reading Vocabulary for all students in the same school in the particular grade. However, the median grade equivalent

for Reading Vocabulary should not be compared with the median grade equivalent for Reading Comprehension.

The value of the grade equivalent, like the national percentile, fluctuates considerably as a function of the raw score. An increase in one raw score point can mean an increase of as little as 0.1 grade equivalent or as much as 1.6 grade equivalents depending on the subtest under consideration. This relationship between the raw score and the grade equivalent should be considered in the interpretation of grade equivalents.

Normal Curve Equivalents

The normal curve equivalent is a score ranging in value from 1 to 99 that combines features of the national percentile and the T-score. The values of the normal curve equivalent are the same as the national percentile values of 1, 50, and 99. Since normal curve equivalents are equal interval scores and national percentiles are not, normal curve equivalents do not match percentiles at other points on the distribution scale. In other words, a gain of 5 normal curve equivalents represents the same amount of performance improvement for students scoring at the lower end of the scale as for students scoring in the middle range of the scale. This relationship does not hold for national percentiles. Figure 3.1 shows the relationship between normal curve equivalents and national percentiles. The figure shows that percentiles are large at the tails of the distribution and small in the middle; while normal curve equivalents are the same size from one end of the scale to the other.

Because normal curve equivalents are equal-interval scores, normal curve equivalents are useful for aggregating and averaging data. Normal curve equivalents have a mean of 50 regardless of the time of testing and the grade level tested. Suppose Sally and Billy are both 3rd grade students who take the CTBS/S. Their test results indicate that Billy's normal curve equivalent score is 40 and Sally's normal curve equivalent is 30. Since normal curve equivalents below 50 signal below average achievement levels or below grade level performance, Billy and Sally both scored below average for their grade level on the test. When comparing Billy's performance with Sally's performance, Sally's normal curve equivalent score of 30 is twice as far below average for the 3rd grade as Billy's normal curve equivalent score of 40. However, Billy's and Sally's normal curve equivalent scores should not be interpreted to mean that Billy knows twice as much as Sally knows nor that Billy's performance was at the 2nd grade level and Sally's performance was at the 1st grade level.

Description of Score Reports

The test scores which are defined in the previous section are provided to districts on the following CTBS/S score reports: Individual Test Record; Class Record Sheet; Frequency Distributions by School and by District; and Evaluator's Summary by School by District. Table 3.1 presents an overview of the various types of test scores that are available on the various CTBS/S score reports. Each type of score report for the various levels of the CTBS/S contains test and

Table 3.1

Test Scores Included on Each CTBS/S Score Report

Score Report	Scores ^a							
	RS	SS	NP	LP	NQ	NS	GE	NCE
Individual Test Record	X	X	X			X		
Class Record Sheet		X	X			X	X	
School and District Frequency Distribution		X		X	X			
Evaluator's Summary		X	X		X		X	X

^aRS = Raw Score
 SS = Scale Score
 NP = National Percentile
 LP = Local Percentile

NQ = National Quarters
 NS = National Stanine
 GE = Grade Equivalent
 NCE = Normal Curve Equivalent

subtest scores for the following areas:

1. Reading Vocabulary Subtest (All Levels);
2. Reading Comprehension Subtest (Levels I, II, and IV only);
3. Reading Comprehension: Sentences Subtest (Level C only);
4. Reading Comprehension: Passages Subtest (Level C only);
5. Reading Total (All Levels);
6. Spelling Subtest (All Levels);
7. Language Mechanics Subtest (All Levels);
8. Language Expression Subtest (All Levels);
9. Language Total (All Levels);
10. Mathematics Computation Subtest (All Levels);
11. Mathematics Concepts Subtest (All Levels);
12. Mathematics Applications Subtest (All Levels);
13. Mathematics Total (All Levels);
14. Battery Total (All Levels);
15. Reference Skills (Levels I, II, and IV only);
16. Science (All Levels); and
17. Social Studies (All Levels).

Thus, test and subtest scores are provided for 15 different areas on the score reports for each of Levels C, I, II, and IV. Note that the 15 areas on the Level C score reports are slightly different from the 15 areas on the Level I, II, and IV score reports.

Individual Test Record

The Individual Test Record is designed to provide information about individual student performance. The report is divided into three parts and is printed in triplicate.

The first part of the report provides raw scores, scale scores, national percentiles, and national stanines for all of the subtests and test totals. (See Table 3.1.) Another part provides a graphic representation of national percentiles for each subtest which allows for a visual representation of the student's relative strengths and weaknesses. The third part of the report displays the student's response to each test item. Pluses, minuses, and blanks are used to indicate correct responses, incorrect responses, and omitted responses, respectively. To aid in interpretation, the item responses are categorized by the content areas and by the thinking process areas described in Chapter II, "Instrumentation".

A carbon copy, referred to as the Individual Test Record Home Report, is designed for parents. The lower part of this copy contains brief descriptions of the different scores on the report.

Class Record Sheet

The Class Record Sheet is designed for teacher use at the classroom level. Individual student names are arranged in alphabetical order for easy access. The chronological age of each student is listed. The test scores given for each of the subtest and test totals on this report are scale scores, national percentiles, national stanines, and grade equivalents. (See Table 3.1.) The last entry on this report

presents class means for each of these test scores.

Right Response Summary

The Right Response Summary provides information on the performance of a group of students in a given grade (by school or by district) on each of the items on the CTBS/S. The items are categorized by content areas and by thinking process areas. For each item, the percentage of students omitting the item, the percentage of students responding correctly to the item, and the percentage of students responding incorrectly to the item are given. For each group of items, the average percentage of students omitting each group of items, the average percentage of students responding correctly to each group of items, and the average percentage of students responding incorrectly to each group of items are given. Corresponding percentages for individual items and for the item groups are given for the national sample for three different norming dates. This information makes possible a more specific comparison between local student achievement and national student achievement on these same items and item groups with respect to content areas and thinking process areas.

Frequency Distribution

The Frequency Distribution provides summary information at the school and district levels for each subtest and test total. (See Table 3.1.) The first two pages of this report provide counts of raw scores falling in specified scale score ranges and the local percentile point of the corresponding scale score range. If the score report is

a School Frequency Distribution, the local percentiles are school local percentiles. However, if the score report is a District Frequency Distribution, the local percentiles are district local percentiles.

The third page of the Frequency Distribution provides the following information for each subtest and test total: the number of students; the single low and high score; scale scores corresponding to the 10th, 25th, 50th, 75th, and 90th local percentiles; and several statistics which include the scale score sum, sums of squares, standard deviation, and mean. The final entry provides the total number of different students taking any part of any subtest.

The fourth page of the Frequency Distribution provides a breakdown of the numbers and percentages of local students falling into the four national quarters. The lowest national quarter is also broken down into five equal percentile ranges (1st to 5th, 6th to 10th, 11th to 15th, 16th to 20th, and 21st to 25th) for further inspection of the test scores.

Evaluator's Summary

The Evaluator's Summary is a summary report designed to provide a concise description of the test results at the district level for each of the subtests and test totals. (See Table 3.1.) The scores included on this report for each school in the district, as well as for the district as a whole, are scale scores, national percentiles, national quarters, grade equivalents, and normal curve equivalents.

CHAPTER IV
SOUTH CAROLINA STUDENT PERFORMANCE IN GRADES 3, 6, AND 11

Introduction

The results from the 1977 Spring testing are presented in this Chapter. The presentation of these results is designed to view the performance of the students in South Carolina by means of making numerous comparisons of the test data. Each comparison is provided to answer a different question in order to fully utilize the information from the testing program. Tables and graphs are presented to facilitate the understanding of the comparisons.

In the first section, "Comparison of Student Performance in South Carolina to Student Performance in the Nation," the performance of 3rd, 6th, and 11th grade students in South Carolina is compared to the performance of 3rd, 6th, and 11th grade students in the nation. The results are presented for the major skill areas on the CTBS/S and are presented in median national percentiles. The comparisons in the first section are designed to answer questions such as, "How does the performance of 3rd grade students in South Carolina compare with the performance of 3rd grade students in the nation on Reading Total?" Math Total?", etc..

The second section, "Comparison of Student Performance Across Grades 3, 6, and 11," presents comparisons of the performance of 3rd, 6th, and 11th grade students in South Carolina. The emphasis in this section is on presenting results to provide answers to two types of

questions which are typically of interest when examining the test results. These two questions are (1) "What are the relative strengths and weaknesses of South Carolina students at a specific grade level?" and (2) "How does the performance of 3rd, 6th, and 11th graders compare for each skill area, as well as for each subtest?". Tabular and graphic formats are presented to aid in the interpretation of the data. The basic statistic utilized in answering the two questions is the normal curve equivalent.

In the third section, "Comparison of Adjusted South Carolina Data to the National Normative Data," data which is racially weighted to be more in accordance with the racial proportions of the national normative sample is presented. Although most of this report describes the performance of the South Carolina student population, as a whole, these racially adjusted results provide information relevant to the question, "How does the performance of South Carolina's students compare to the performance of the Nation's students when adjusted for racial differences?". These results are presented for the areas of Reading, Language, Mathematics, Battery Total, Reference Skills, Science, and Social Studies.

In the fourth section, "Comparison of Subgroup Results for Grades 3, 6, and 11," the data are summarized by subgroups based on sex, race, and Title I status. These results are presented solely for descriptive purposes and should be helpful in identifying relative strengths and weaknesses of the various subgroups across grade levels. Since CTB/McGraw-Hill does not provide separate normative information for any of these subgroups, these subgroups cannot be compared to a national normative group. Additionally, these subgroups should not be compared with each other.

Comparison of Student Performance in
South Carolina to Student Performance in the Nation

For each of the three grade levels tested in the South Carolina Statewide Testing Program, comparisons between the performance of the students in South Carolina and the performance of the students in the nation can be made. In this section, South Carolina's test scores for the major skill areas at each grade level are compared to national test scores using median national percentiles. Following each comparison to the national average, a discussion of the relative strengths and weaknesses of the different subject areas relative to the national performance is presented. Additionally, the median national percentiles and median grade equivalents for the subtests, as well as for the tests, are presented in Appendix A.

Student Performance in Grade 3

In Table 4.1, the median national percentiles for 3rd graders in South Carolina are presented.

Table 4.1
Median National Percentiles for South Carolina
Grade 3

<u>Skill Area</u>	<u>State Median</u>	<u>National Median</u>
Reading Total	41.0	50.0
Language Total	43.1	50.0
Mathematics Total	39.9	50.0
Battery Total	42.2	50.0
Reference Skills ^a		
Science	41.0	50.0
Social Studies	43.1	50.0

^aSince Level C of the CTBS/S does not contain a Reference Skills Test, combined data is not reported for Reference Skills.

For each of the five skill areas (excluding Reference Skills) and for the Battery Total, the performance of South Carolina 3rd grade students was below the national median (see Table 4.1). Since the median is the middle score, the median percentile reported for Reading Total, for example, indicates that the middle score for South Carolina 3rd grade students was similar to the 41st national percentile score. If the performance of South Carolina 3rd grade students had been at or above the national average in Reading Total, the median national percentile for South Carolina 3rd graders would have been 50 or above.

Figure 4.1 provides a graphic representation of the data presented in Table 4.1. A comparison of the performance of South Carolina's 3rd grade students relative to the nation across the different skill areas is highlighted in Figure 4.1. The performance of the nation is represented by the broken line corresponding to the 50th national percentile, and the performance of South Carolina is represented by the vertical bars. Language Total and Social Studies, which are represented by the tallest bars and the highest numerical values in Figure 4.1, were the two skill areas in which the performance of the 3rd graders in South Carolina was highest. In a similar manner, the area of lowest performance for South Carolina students was Mathematics Total. This comparison across skill areas is possible because the scores of the nation's 3rd graders are used as a reference point in each skill area.

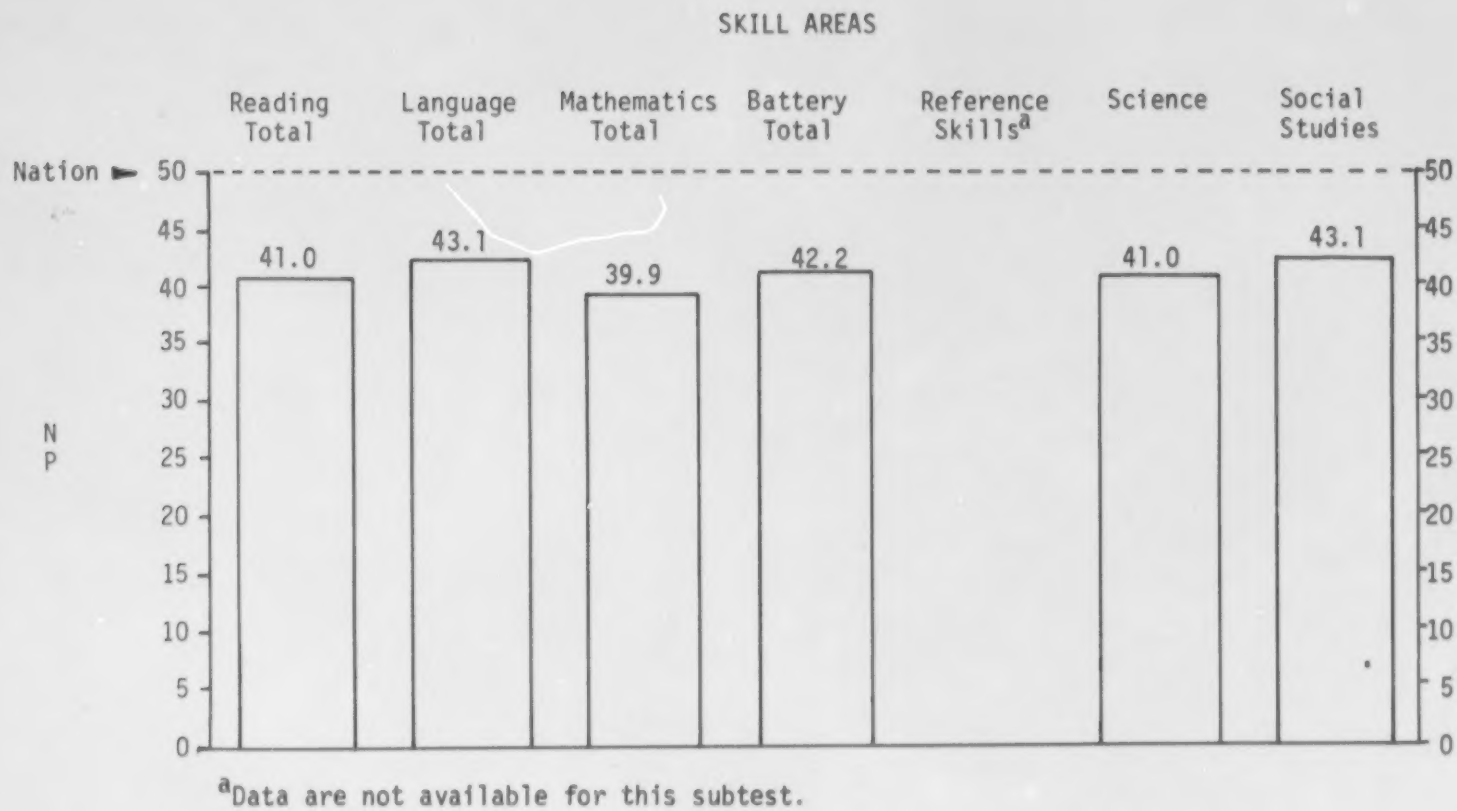


Figure 4.1

Bar Graph of South Carolina Median National Percentiles (NP's)
for the CTBS/S Skill Areas and Battery Total

Another useful way of examining the results of a particular grade is to consider the distribution of student scores with respect to the national distribution of scores. For convenience, the national distribution of scores is broken down into four percentile ranges. These four percentile ranges are referred to as the upper quarter (76-100), upper middle quarter (51-75), lower middle quarter (26-50), and the lower quarter (1-25). If the performance of South Carolina's students were the same as the performance of the national group, then 25% of South Carolina's students would fall in each of the four national quarters.

The percentages of South Carolina's 3rd grade students falling into each of the quarters of the national distribution are presented in Table 4.2. When comparing South Carolina's students to the nation using the national quarters, the preference is to have more than 25% of South Carolina's students scoring in each of the two upper quarters and less than 25% scoring in each of the two lower quarters.

Viewing the actual data, observe that 40.9% (17.6%, upper quarter, + 23.3%, upper middle quarter) of the 3rd graders in South Carolina scored above the national median percentile of 50 for Reading Total. Similarly, for Language Total, Mathematics Total, Battery Total, Science, and Social Studies, the percentages scoring above the national median percentile of 50 were 43.4%, 36.6%, 39.6%, 43.4%, and 44.2%, respectively.

Table 4.2
Percentages of South Carolina Students
in Each Quarter of the National Distribution
Grade 3^a

National Percentile Ranges	National Norm	South Carolina						
		Reading Total	Language Total	Mathematics Total	Battery Total	Reference Skills ^b	Science	Social Studies
76-99	25	17.6	19.9	12.0	15.6	NA	21.6	21.4
51-75	25	23.3	23.5	24.6	24.0	NA	21.8	22.9
26-50	25	22.8	24.1	31.1	26.5	NA	22.5	23.7
1-25	25	36.3	32.6	32.3	33.9	NA	34.0	32.1

^an = 41,660. Total number of students completing any part of the test battery.

^bThere is no Reference Skills Test on Level C of the CTBS/S.

Student Performance in Grade 6

The median national percentiles for South Carolina for Grade 6 are presented in Table 4.3. These percentiles are also graphically presented in Figure 4.2.

Table 4.3
Median National Percentiles for South Carolina
Grade 6

<u>Skill Area</u>	<u>State Median</u>	<u>National Median</u>
Reading Total	40.0	50.0
Language Total	42.5	50.0
Mathematics Total	36.9	50.0
Battery Total	37.3	50.0
Reference Skills	48.7	50.0
Science	45.6	50.0
Social Studies	41.8	50.0

As indicated in Table 4.3 and Figure 4.2, the performance of South Carolina students was below the national average in each skill area. Reference Skills with a median national percentile of 48.7 was the skill area of highest performance for South Carolina 6th grade students in that the performance for this skill area closely approximated the performance of the national group. As in Grade 3, Mathematics Total with a median national percentile of 36.9 was the skill area in which South Carolina's Grade 6 students demonstrated the poorest performance.

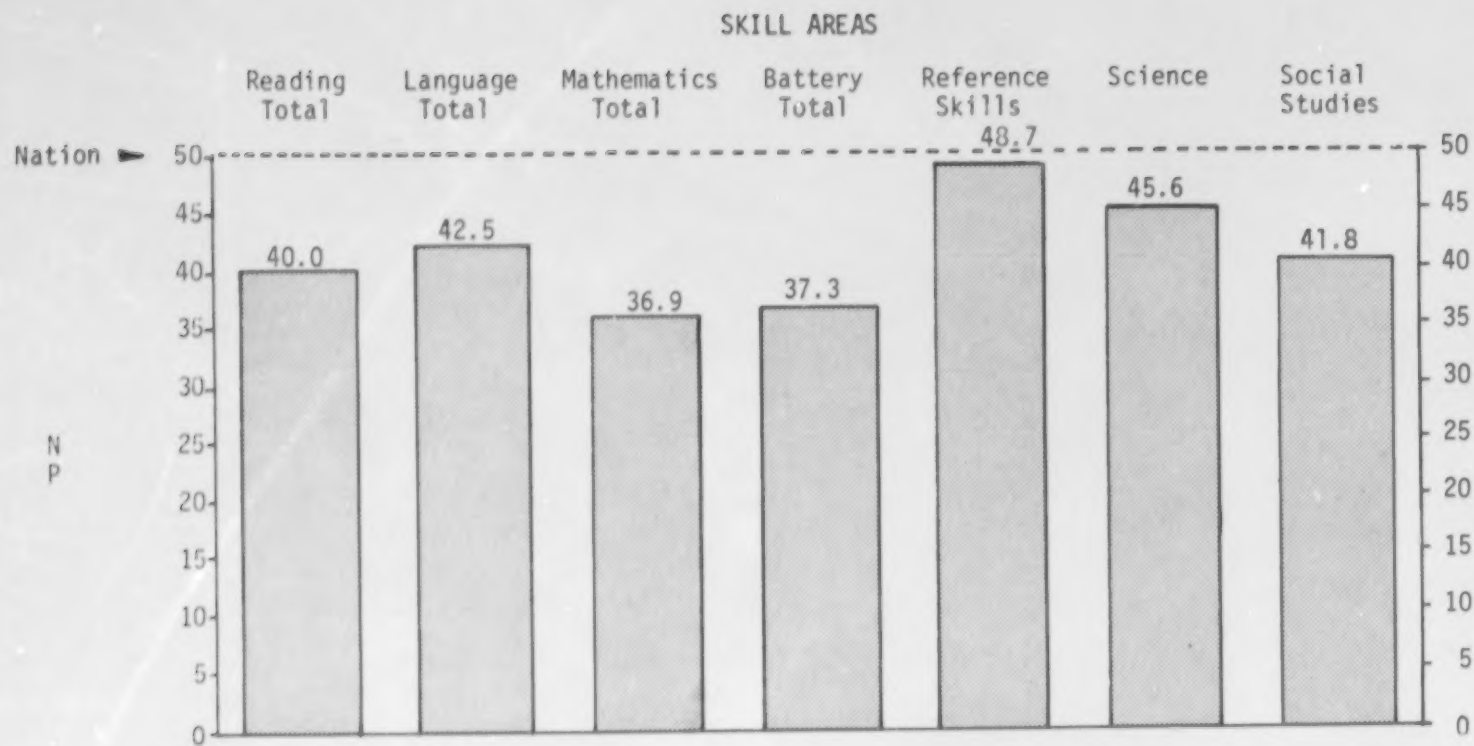


Figure 4.2

Bar Graph of South Carolina Median National Percentiles (NP's)
for the CTBS/S Skill Areas and Battery Total

Grade 6

Finally, the distribution of South Carolina 6th graders's scores may be compared to the national distribution of scores by looking at Table 4.4. This table presents the percentages of South Carolina students scoring in the specified national percentile ranges. For all skill areas except Science, less than 25% of South Carolina's 6th grade students fell into each of the upper two quarters; while more than 25% fell into each of the lower two quarters. Looking at the data in terms of the percentages of South Carolina students scoring in the upper two quarters combined, (that is, above the national median percentile of 50), the largest percentages occurred in Reference Skills and Science with percentages of 45.5% and 45.9%, respectively. Likewise, 41.8% of South Carolina's 6th grade students scored above the 50th national percentile for Language, 40.9% for Social Studies, 38.0% for Reading, 36.7% for Battery Total, and 32.4% for Mathematics Total. These comparisons concur with the earlier comparisons using median national percentiles in that Science and Reference Skills were the strongest areas of performance for South Carolina 6th graders, and Mathematics Total was the weakest area.

Student Performance in Grade 11

The median national percentiles for South Carolina 11th graders are presented in Table 4.5. A graphical illustration of the data in Table 4.5 is presented in Figure 4.3.

Table 4.4
Percentages of South Carolina Students
in Each Quarter of the National Distribution
Grade 6^a

National Percentile Ranges	National Norm	South Carolina						
		Reading Total	Language Total	Mathematics Total	Battery Total	Reference Skills	Science	Social Studies
76-99	25	16.9	19.4	11.4	16.0	21.5	20.4	19.2
51-75	25	21.1	22.4	21.0	20.7	24.0	25.5	21.7
26-50	25	27.4	27.1	32.9	27.0	26.5	24.0	29.3
1-25	25	34.6	31.1	34.7	36.3	28.1	30.1	29.8

^an = 47,971. Total number of students completing any part of the test battery.

Table 4.5
Median National Percentiles for South Carolina
Grade 11

<u>Skill Area</u>	<u>State Median</u>	<u>National Median</u>
Reading Total	35.0	50.0
Language Total	38.8	50.0
Mathematics Total	34.1	50.0
Battery Total	32.9	50.0
Reference Skills	41.3	50.0
Science	39.2	50.0
Social Studies	43.8	50.0

As indicated in Table 4.5 and Figure 4.3, South Carolina 11th grade students scored below the national median percentile in all of the skill areas. Relative to the nation, performance for South Carolina 11th graders was strongest in the skill areas of Social Studies and Reference Skills with median national percentiles of 43.8 and 41.3, respectively. Mathematics Total and Reading Total with median national percentiles of 34.1 and 35.0 were the weakest areas of performance.

One peculiar but explainable event occurred in the 11th grade data. The State's median national percentile for Battery Total of 32.9 is lower than any of its three components, Reading Total (35.0), Language Total (38.8), and Mathematics (34.1). The Battery Total score is not an average of the scores of its component subtests. Rather, the items for the three areas of Reading, Language, and Mathematics are pooled together to form a new test, the Battery Total. This composite test, Battery Total, is then treated as if it were a new and different test in that percentiles and other derived scores are based on this new

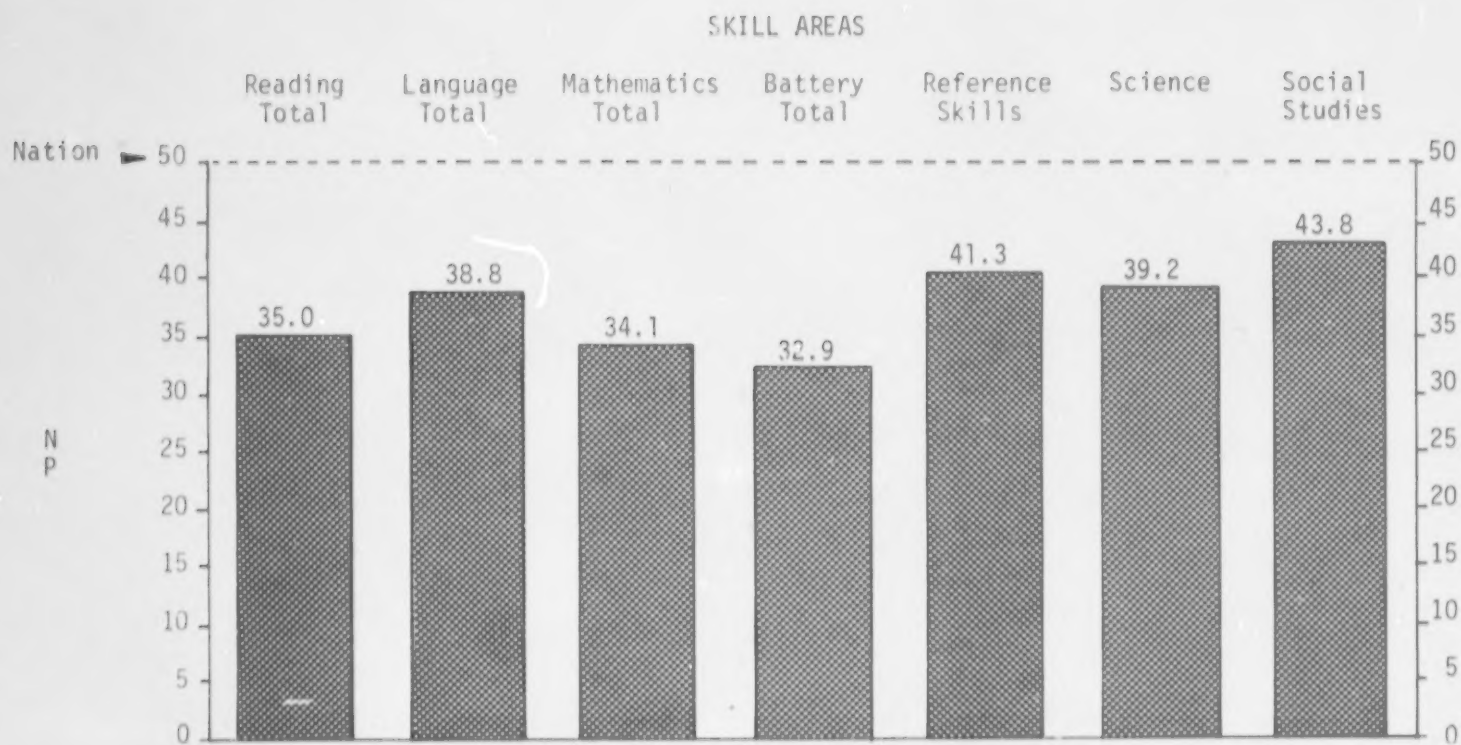


Figure 4.3

Bar Graph of South Carolina Median National Percentiles (NP's)
for the CTBS/S Skill Areas and Battery Total

Grade 11

pool of items. Therefore, the possibility exists that the Battery Total score can be slightly higher or lower than the Reading Total, Language Total, or Mathematics Total score. A second reasonable explanation may be offered for this phenomenon. Only students who complete the Reading, Language, and Mathematics Tests receive a Battery Total score. Therefore, a student who only took the Mathematics Test may have a Mathematics Total, but may not have this score included as part of the Battery Total because the student may not have completed the Reading or Language Tests. Since all students in South Carolina usually do not complete all three tests included in the Battery Total, the number of cases for the State's Battery Total is usually not larger than the smallest number of cases for any of the three component tests. Therefore, the possibility exists that the median Battery Total can be slightly higher or lower than the corresponding values for Reading Total, Language Total, and Mathematics Total.

Table 4.6 contains the percentage of 11th grade students that fell into the four national quarters. In each skill area, less than 25% scored in the upper quarter; and more than 25% scored in the lower quarter. Again evidence is presented that the performance of South Carolina students is below the national average. The largest percentage of South Carolina's 11th grade students scoring above the national median occurred in the areas of Social Studies with 41.9% and Reference Skills with 41.4%. The corresponding percentages for the other areas were Language, 40.5%; Science, 40.3%; Reading, 36.8%; and Mathematics, 32.6%. For Battery Total, 33.1% of South Carolina's 11th graders scored above the median compared to the 50% in the nation which again provides evidence that, in general, the performance of South Carolina's 11th graders is below the nation.

Table 4.6
Percentages of South Carolina Students
in Each Quarter of the National Distribution
Grade 11^a

National Percentile Ranges	National Norm	South Carolina						
		Reading Total	Language Total	Mathematics Total	Battery Total	Reference Skills	Science	Social Studies
76-99	25	16.9	19.2	15.3	15.7	17.4	16.6	17.5
51-75	25	19.9	21.3	17.3	17.4	24.0	23.7	24.4
26-50	25	22.4	21.7	26.2	25.0	26.4	21.6	26.0
1-25	25	40.8	37.8	41.2	41.9	32.3	38.0	32.2

^a_n = 37,271. Total number of students completing any part of the test battery.

Comparison of Student Performance Across Grades 3, 6, and 11

The comparison of student performance across Grades 3, 6, and 11 proceeds in three parts. In the first part of this section, the overall performance of 3rd, 6th, and 11th graders is discussed by comparing the Battery Total frequency distributions for each grade. The second part of this section focuses on the comparison of student performance across skill areas and grade levels using normal curve equivalents (NCE's). In the last part of this section, South Carolina student performance across grade levels is summarized by observing the percentage of students falling into each of the national quarters.

Comparison of Overall Performance Across Grades 3, 6, and 11

The comparison of the overall achievement of students across Grades 3, 6, and 11 can be accomplished by a comparison of the Battery Total frequency distributions for each of the three grade levels. Frequency polygons which are graphical representations of frequency distributions best illustrate this comparison. Before this comparison is discussed, however, some general comments describing frequency distributions and frequency polygons are made.

A frequency distribution is an arrangement of scores that shows the number of times each score occurred for a given group of students. Score ranges or intervals of equal width are generally used for classifying the score of each student in the group. Counts of the number of students falling into each score interval, referred to as frequencies, are then obtained. Scale scores are the most appropriate scores to use in

the development of frequency distributions since scale scores are independent of the test level and are equal interval scores. Therefore, scale scores for a particular test or subtest can be readily combined for different levels of the CTBS/S. The ability to combine data across different test levels is necessary in the case of Grades 3 and 6 in which two different levels of the CTBS/S were administered in each grade.

If comparisons of two or more frequency distributions are to be made, converting the frequencies to percents is more instructive. Because the percent base of 100 is constant, percent distributions for a given test or subtest can be directly compared and contrasted across grade levels. The conversion of frequencies to percents is accomplished by simply dividing the number of scores in a particular score interval (frequency) by the total number of scores. A visual display of a frequency distribution, known as a frequency polygon, can then be constructed by plotting each scale score range against its corresponding proportional frequency.

Since visual displays are often the most revealing, frequency polygons are used for comparing the percent distributions of the Battery Total scale scores for Grades 3, 6, and 11. These polygons are presented in Figure 4.4. The scale scores along the horizontal axis represent the midpoints of scale score intervals. The percentage of scores falling into each scale score interval is given along the vertical axis. The solid line distribution represents the data for Grade 3, the spiral line distribution represents the data for Grade 6, and the dash line distribution represents the data for Grade 11.

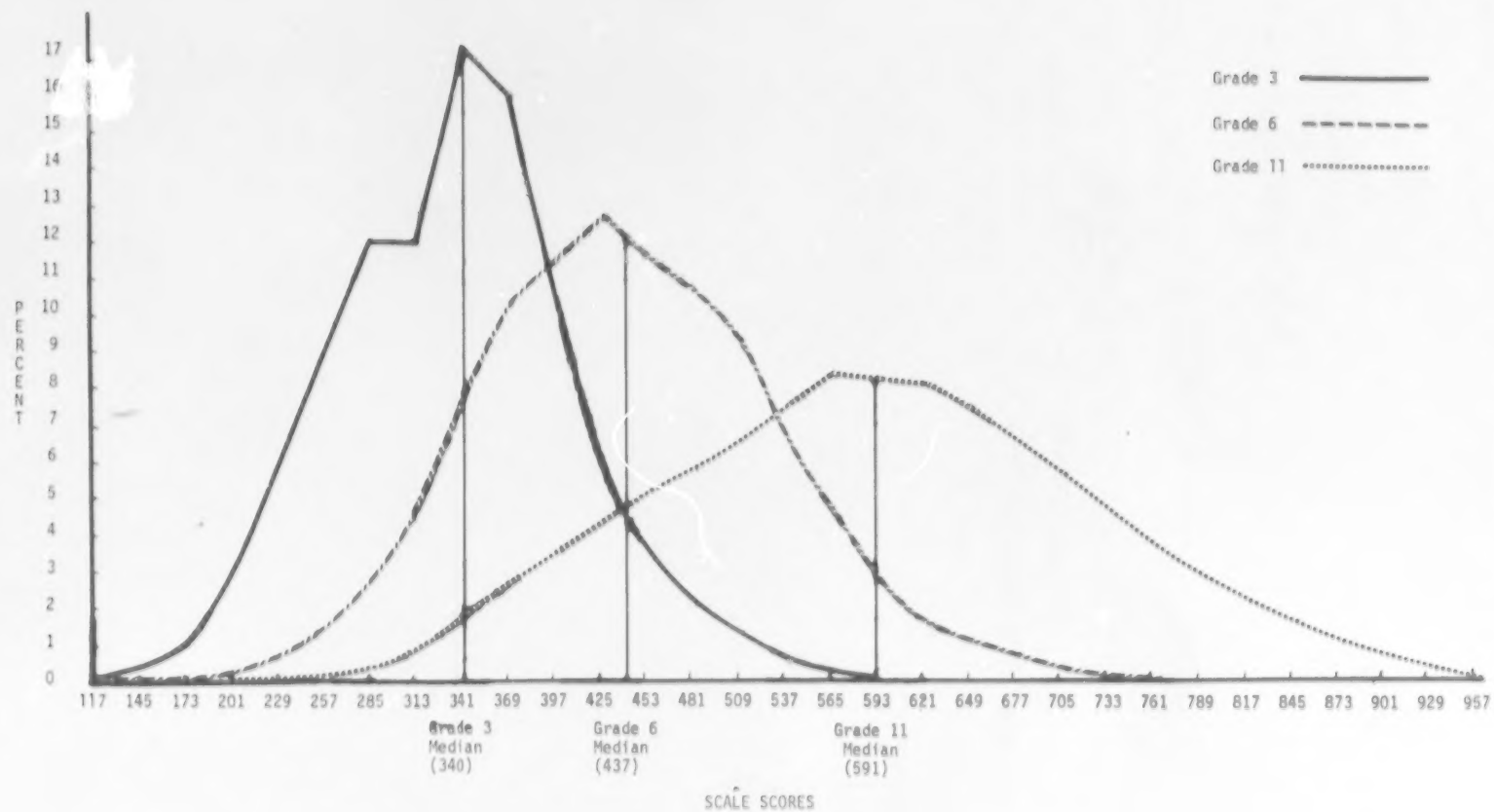


Figure 4.4
Percent Distribution of Battery Total Scale Scores
for Grades 3, 6, and 11

The median scale score for each grade level is represented in Figure 4.4 by a solid vertical line connecting each grade level curve with the horizontal axis. The median scale score for the 41,660 Grade 3 students was 340; the median scale score for the 47,971 Grade 6 students was 437; and the median scale score for the 37,271 Grade 11 students was 591. The difference in the median scale scores between Grade 3 and Grade 6 was 97 scale score points, and the difference in median scale scores between Grade 6 and Grade 11 was 154 scale score points. These differences average out to be an increase of about 30 scale score points per grade.

The difference in performance across the three grade levels is more clearly illustrated by observing the shapes of the distributions in Figure 4.4. Although the three distributions are generally bell-shaped, the Grade 3 distribution is less spread out than the Grade 6 distribution; and the Grade 6 distribution is less spread out than the Grade 11 distribution. The increase of score distribution spread from Grade 3 to Grade 11 is indicative of the fact that the difference between low and high achievers becomes more distinct as a child progresses along the educational continuum. In other words, since more learning opportunities are offered to students as the students progress to higher grades, the higher achievers are able to take advantage of these opportunities; while the low achievers do not have this advantage. Thus, as students progress to higher grade levels, the extremes of the distribution elongate. As a result, the distribution spreads out or flattens out, causing the difference between the high and low achievers

to appear greater.

In addition to the spread of the distributions, another interesting feature elucidated in Figure 4.4 is the amount of overlap of the score distributions for the three grade levels. The 3rd grade distribution indicates that 8% (3,215) of the 3rd graders exceeded the 6th grade median scale score of 437. For the 6th grade population, approximately 13% (5,856) of the 6th grade students scored below the 3rd grade scale score median of 340; while about 5% (2,237) exceeded the 11th grade median scale score of 591. The performance of the 11th graders appears to be the most variable as emphasized by the overlap of 11th grade performance with both 3rd and 6th grade performance. The 11th grade distribution illustrates that 13% (4,489) of the 11th graders scored below the 6th grade median scale score of 437 and 2% (615) of the 11th graders scored below the 3rd grade median scale score of 340.

In conclusion, with the exception of the curious plateau in the 3rd grade graph which also appeared in the graph of the Fall 1975 4th grade data, the distributions are reasonably symmetric and are generally bell-shaped. Consequently, no severe ceiling or floor effects are evidenced in the data aggregated at the State level.

Comparison of Student Performance in Skill Areas Within and Across Grade Levels

Although graphs of percent distributions using scale scores are appropriate for making general comparisons of overall performance across grade levels, normal curve equivalents (NCE's) are more appropriate for making specific skill area comparisons across grade levels. Until the

advent of the NCE score, the national percentile was the score used for making comparisons across skill areas; and the scale score was the score used for making comparisons across grade levels in a particular skill area. However, NCE's have distinct advantages over national percentiles and scale scores, and, as a result, are the most appropriate scores to use in making both types of comparisons. Thus, this score will be emphasized in the ensuing discussions of test result comparisons across Grades 3, 6, and 11. Since the NCE is a relatively new score, several brief comments are made concerning NCE's and the advantages of NCE's over national percentiles and scale scores prior to the discussion of test results. Refer to the "Definitions of Scores Section" of Chapter 3 for a definition of the normal curve equivalent (NCE) score.

The NCE score was developed by the RMC Research Corporation primarily to standardize test data for the evaluation of Title I programs. The distribution of the NCE is normal; that is, the distribution follows the traditional bell-shaped curve. This score was constructed to have a mean of 50 and a standard deviation of 21.06. (The standard deviation is a statistic which measures the amount of variation in a set of scores.) These values for the mean and standard deviation were chosen so that the minimum NCE score of 1 would correspond to the minimum percentile of 1, and the maximum NCE score of 99 would correspond to the maximum percentile of 99. Other than at these two extreme scores, the only other place where the distributions of NCE's and percentiles perfectly match is at the score of 50 (refer to Figure 3.1 in Chapter III).

National percentiles and NCE scores do not match at any other points on their distributions other than at 1, 50, and 99.

The primary advantage of using NCE's rather than national percentiles in making comparisons across skill areas stems from the fact that NCE's measure achievement on an interval scale; whereas, national percentiles measure achievement on an ordinal scale. NCE's are considered to be interval measures because the differences between any two consecutive scores on the NCE scale are of equal size regardless of the location of the two scores on the scale. Therefore, a gain of five NCE's represents exactly the same amount of performance improvement for students at the extreme low end of the achievement distribution as for students scoring in the middle or extreme upper end of the achievement distribution. National percentiles, however, are measured on an ordinal scale. An ordinal scale is one on which students are only ranked in terms of their performance and, therefore, is not an equal interval scale. The differences between any two consecutive scores on the national percentile scale are not of equal size. The sizes of these differences depend on the location of the two consecutive national percentile scores along the scale. Differences occurring near the middle of the percentile scale are usually much smaller than differences occurring at the extremes of the scale.

The primary advantage which the NCE has over the scale score is that the NCE scale is the same across skill areas; whereas, the scale of the scale score varies across skill areas. The NCE is developed on

an equal interval scale that ranges from 1 to 99 for each test or subtest. Although the scale score is an equal interval measure, the scale of the scale scores varies depending upon the test or subtest. Since the scale of the NCE does not vary depending upon the test or subtest, the NCE can be used for making comparisons across tests and subtests.

In view of the advantages of the NCE over the national percentile and the scale score, the NCE was regarded as the most appropriate score to use in making across skill area and across grade level comparisons of the State test results. Although mean NCE's corresponding to mean scale scores are available, differences between mean NCE's and NCE's derived from mean scale scores were found to be of trivial size. Therefore, the approach of converting mean scale scores to NCE's was used throughout the report for technical reasons. However, for ease of discussion, the NCE's converted from mean scale scores are referred to as mean NCE's.

In Table 4.7, the State test results in NCE's for Grades 3, 6, and 11 for each of the major skill areas and subtests are given. The NCE scores as reported in Table 4.7 indicate that, in general, the performance of 3rd graders was slightly above that of 6th graders and that the performance of 11th graders was below the performance of either of the other two grade levels. Caution should be taken in the interpretation of this statement. The mean scale scores make clear the fact that the absolute performance of the older students always surpasses that of the older students' younger counterparts. When compared to national normative data using NCE's, however, the 11th grade populations' performance is

Table 4.7
Mean Scale Scores and Normal Curve Equivalents
for South Carolina Students in Grades 3, 6, and 11
for the CTBS/S Subtests and Tests

All Students

Subtests and Tests	Mean Scale Scores			Normal Curve Equivalents ^a		
	Grade 3	Grade 6	Grade 11	Grade 3	Grade 6	Grade 11
Reading Vocabulary	362	454	613	45	42	42
Reading Comprehension	NA ^b	485	608	NA ^b	47	43
Reading Total	364	462	601	45	44	42
Language Mechanics	416	485	577	47	47	45
Language Expression	424	495	599	46	47	45
Spelling	406	476	590	46	46	45
Language Total	397	472	583	46	46	44
Mathematics Computation	350	440	553	45	44	43
Mathematics Concepts	NA ^b	445	596	NA ^b	44	42
Mathematics Applications	NA ^b	452	571	NA ^b	44	41
Mathematics Total	349	438	563	44	43	41
Battery Total	336	440	592	45	44	41
Reference Skills	NA ^b	498	628	NA ^b	49	46
Science	382	479	583	46	47	45
Social Studies	384	474	595	47	46	46
<u>n</u> ^c	41,660	47,971	37,271	41,660	47,971	37,271

^aThe national mean normal curve equivalent (NCE) is 50 for all CTBS/S subtests and tests. NCE's were converted from mean scale scores but are referred to as mean NCE's.

^bData for these subtests are not available.

^cn = Total number of students completing any CTBS/S subtest or test.

clearly the most deficient. The NCE scores of South Carolina students at all grade levels for all subtests and tests are below the national mean NCE of 50.

The same scores reported in Table 4.7 are presented in graphical form in Figures 4.5 through 4.9. Since these figures more clearly illustrate achievement patterns for the State across grade levels than the tabulated data, the discussion of the State test results will focus on these figures.

Figure 4.5 presents an overview of 3rd, 6th, and 11th grade performance in the three major skill areas of Reading, Language, and Mathematics, and for Battery Total. The circles joined by solid lines represent 3rd grade performance; the triangles joined by spiral lines represent 6th grade performance; and the squares joined by dashed lines represent 11th grade performance. Note that the lines connecting the geometric figures are included as a convenience; these lines do not imply a functional relationship. The arrow adjacent to the NCE of 50 represents the national norm. As indicated in Figure 4.5, the three grades display similar achievement patterns. For all three grades, the area of Language was consistently strong relative to the nation. The mean NCE score in Language for 3rd and 6th graders was 46, while the mean NCE score for 11th graders was 44. Mathematics was the weakest of the three skill areas for all three grades with 3rd graders scoring a mean NCE score of 44, 6th graders scoring a mean NCE score of 43, and 11th graders scoring a mean NCE score of 41. The achievement level of Reading was between the achievement levels of

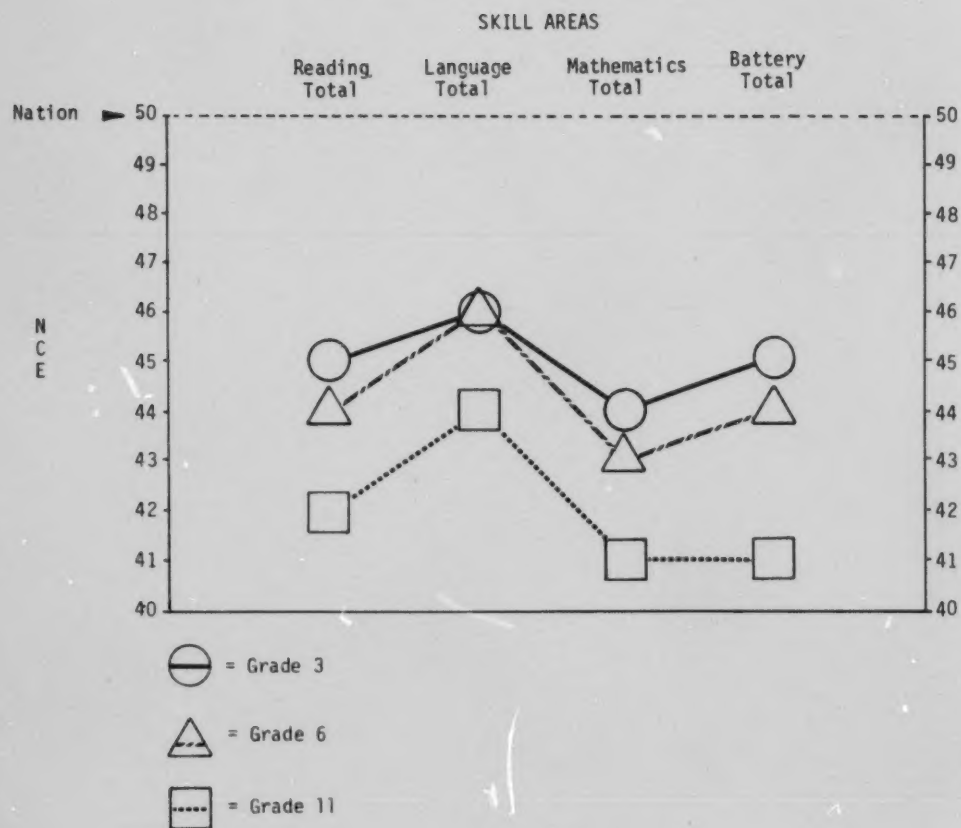


Figure 4.5

Graph of Mean Normal Curve Equivalents
for South Carolina Students in Grades 3, 6, and 11
Reading Total, Language Total, Mathematics Total,
and Battery Total

Language and Mathematics for all three grades. In Reading, 3rd graders scored a mean NCE of 45; 6th graders scored a mean NCE of 44; and 11th graders scored a mean NCE score of 42.

Figure 4.6 illustrates the performance of South Carolina 3rd, 6th, and 11th graders on the subtests comprising Reading Total. Note that only the Reading Vocabulary Subtest data is graphed for Grade 3. Since Level C of the CTBS/S does not contain a subtest comparable to the Reading Comprehension Subtest of Level I, data for the Reading Comprehension Subtest were only available for students who took Level I. Inclusion of the Reading Comprehension data for only those 3rd grade students who took Level I would not give an accurate picture of performance on Reading Comprehension for all of South Carolina's 3rd graders. Therefore, these data were omitted in Figure 4.5. For 6th graders, achievement in Reading Comprehension (NCE=47) was superior to achievement in Reading Vocabulary (NCE=42). However, for 11th graders, performance in Reading Vocabulary (NCE=42) was very similar to performance in Reading Comprehension (NCE=43). On the Reading Vocabulary Subtest, the achievement level of South Carolina 3rd graders (NCE=45) was closer to the achievement level of students in the nation than the achievement levels of 6th graders (NCE=42) or 11th graders (NCE=42).

Figure 4.7 illustrates the performance of South Carolina's 3rd, 6th, and 11th graders on the subtests comprising Language Total. From Figure 4.7, the inference can be made that performance on the three Language Subtests was quite consistent across the subtests for each of the three grade levels. The 3rd grade students scored a mean NCE of

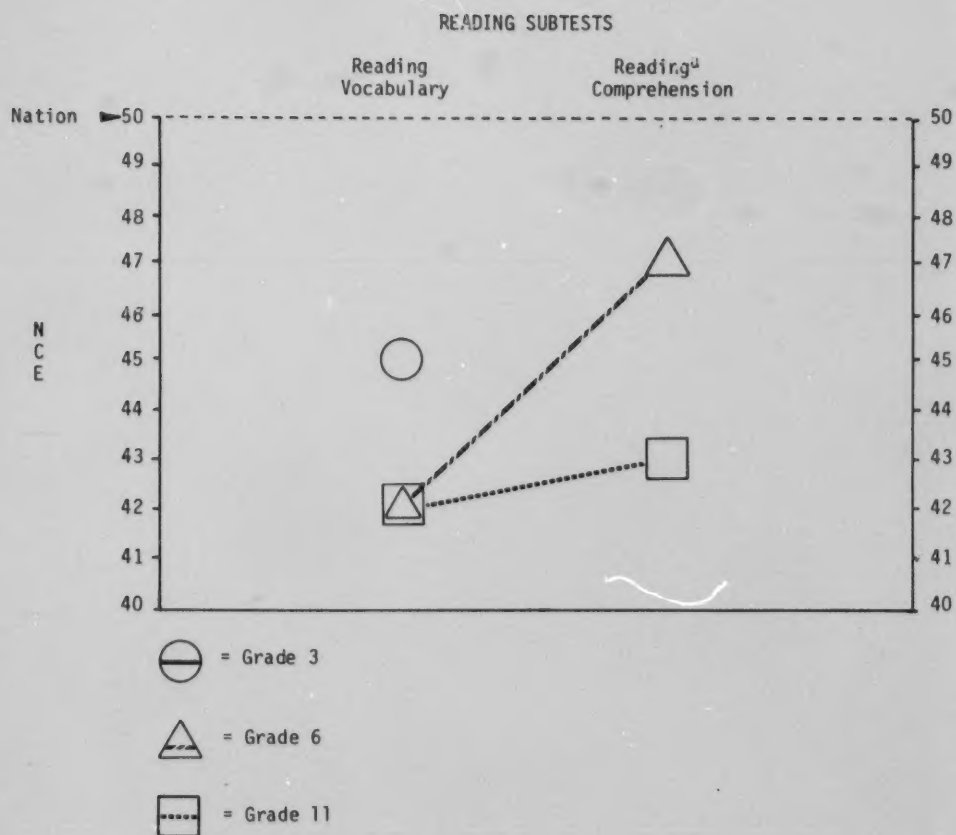


Figure 4.6
 Graph of Mean Normal Curve Equivalents
 for South Carolina Students in Grades 3, 6, and 11
 Reading Subtests

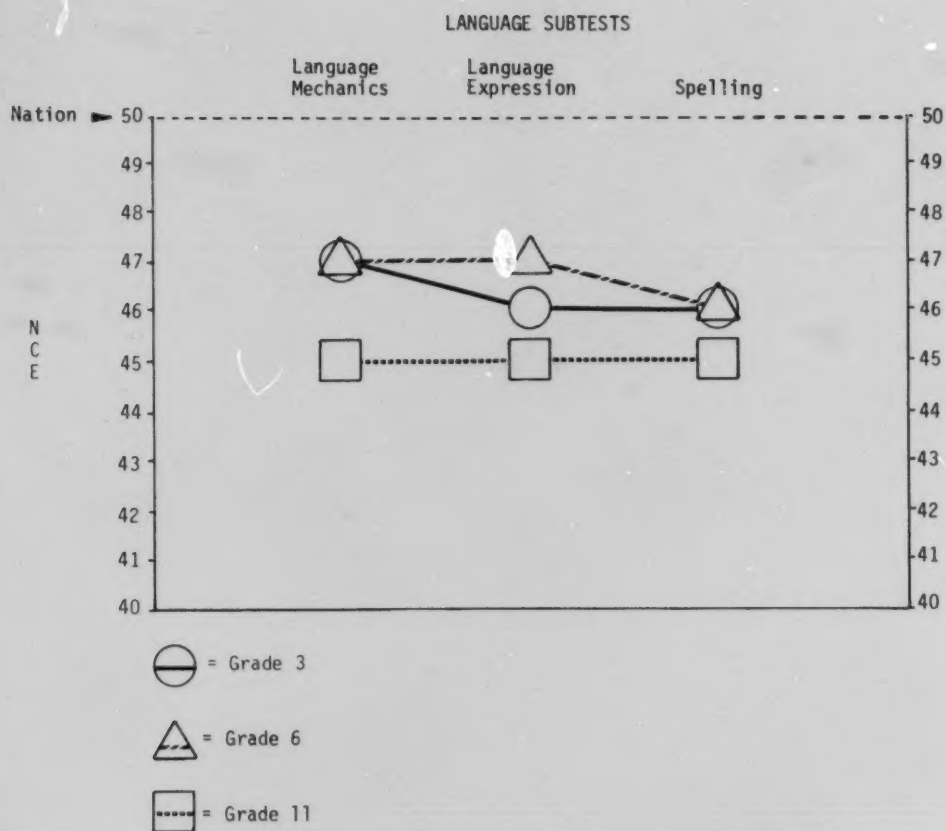


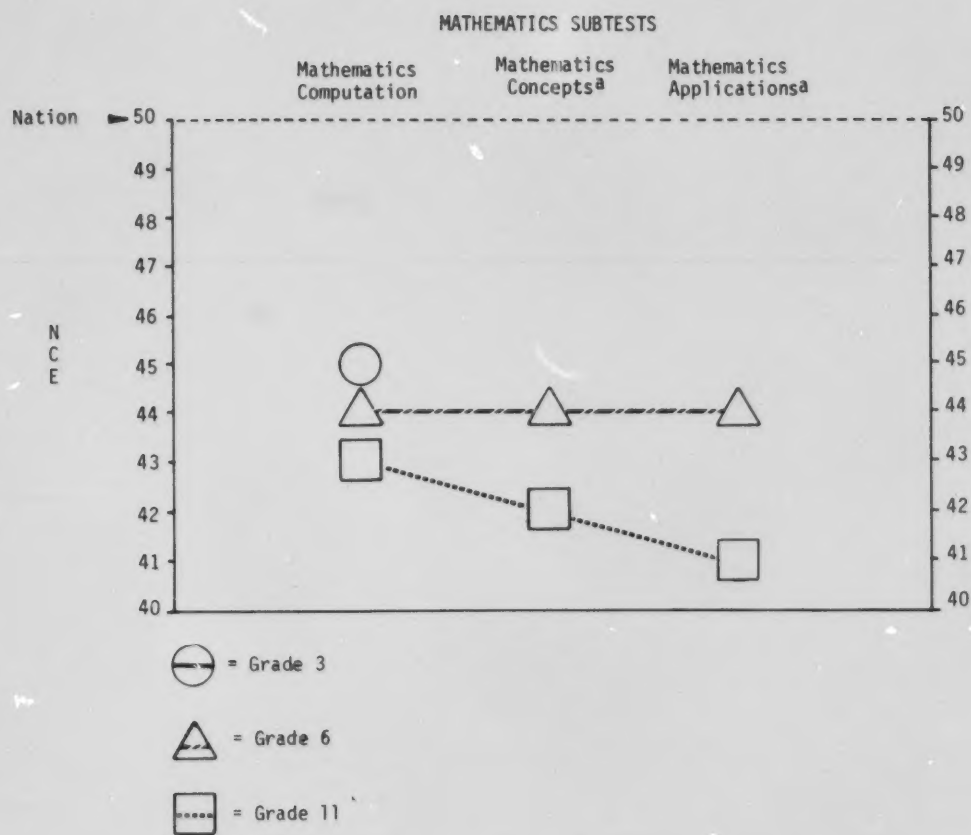
Figure 4.7

Graph of Mean Normal Curve Equivalents
for South Carolina Students in Grades 3, 6, and 11

Language Subtests

47 in Language Mechanics, 46 in Language Expression, and 46 in Spelling. Performance of the 6th grade students was identical to that of the 3rd grade students with the exception of Language Expression in which 6th graders (NCE=47) scored slightly higher than 3rd graders (NCE=46). On all of the Language Subtests, the performance of 11th graders was slightly below that of 3rd and 6th graders. The 11th grade students had a mean NCE score of 45 on each of the three Language Subtests.

In Figure 4.8, the performance of South Carolina's 3rd, 6th, and 11th grade students is shown for the Mathematics Total Subtests. Figure 4.8 indicates that, in Mathematics Computation, there was little difference between the performance of 3rd grade students (NCE=45), 6th grade students (NCE=44), and 11th grade students (NCE=43). The third grade data are only provided for the Mathematics Computation Subtest since the Mathematics Concepts and Mathematics Applications Subtests were incompatible for Levels C and I. The differences between 6th and 11th grade performance in Mathematics Concepts and Mathematics Applications, however, were more pronounced. Although the achievement of 6th graders was the same for the three Mathematics Subtests (NCE=44), the achievement of the 11th graders declined across the three Mathematics Subtests. Students in Grade 11 scored a NCE of 43 in Mathematics Computation, 42 in Mathematics Concepts, and 41 in Mathematics Applications.



^aData are not available for these subtests in Grade 3.

Figure 4.8

Graph for Mean Normal Curve Equivalents
for South Carolina Students in Grades 3, 6, and 11

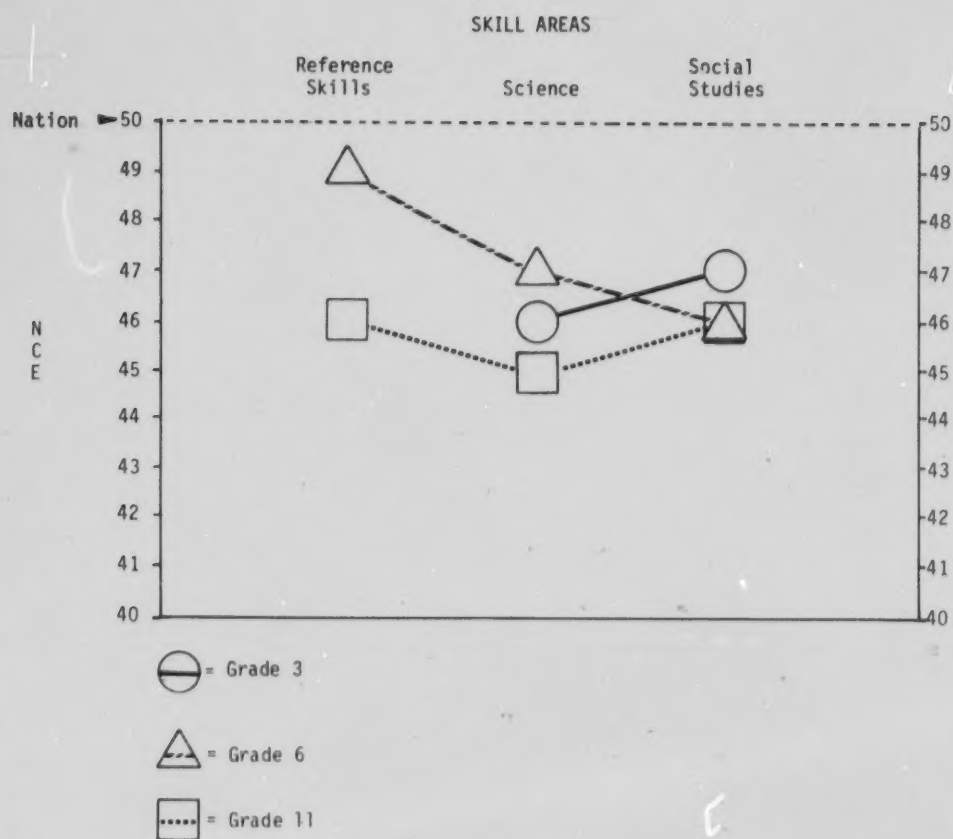
Mathematics Subtests

The performance of South Carolina's 3rd, 6th, and 11th grade students in Reference Skills, Science, and Social Studies, which are the subtests not included in the Battery Total, is described in Figure 4.9. Relative to the national mean NCE of 50, performance in skill areas of Reference Skills (excluding Grade 3), Science, and Social Studies tended to be higher than performance in the major skill areas of Reading, Language, and Mathematics. The Reference Skills Subtest data are missing for Grade 3 since there is no Reference Skills Subtest on Level C of the CTBS/S. In Reference Skills, South Carolina's 6th graders had a mean NCE of 49, thus nearly achieving the national norm. Otherwise, for all three grade levels, performance in these three areas (NCE's of 45, 46, or 47) was similar to or slightly higher than the relatively high performance exhibited by each grade level in the Language area.

Summary of Student Performance Across Grades 3, 6, and 11

To complete the comparison of South Carolina student performance across grade levels, information on the percentages of South Carolina students falling in each quarter of the national distribution is presented for each of the major skill areas and the Battery Total. These data are presented using graphs called histograms (see Figures 4.10 through 4.16).

In Figure 4.10, the histograms representing the percentages of South Carolina 3rd, 6th, and 11th graders falling into each national quarter for Battery Total are given. The Battery Total quarter



^aData are not available for Reference Skills in Grade 3.

Figure 4.9

Graph of Mean Normal Curve Equivalents
for South Carolina Students in Grades 3, 6, and 11
Reference Skills, Science, and Social Studies

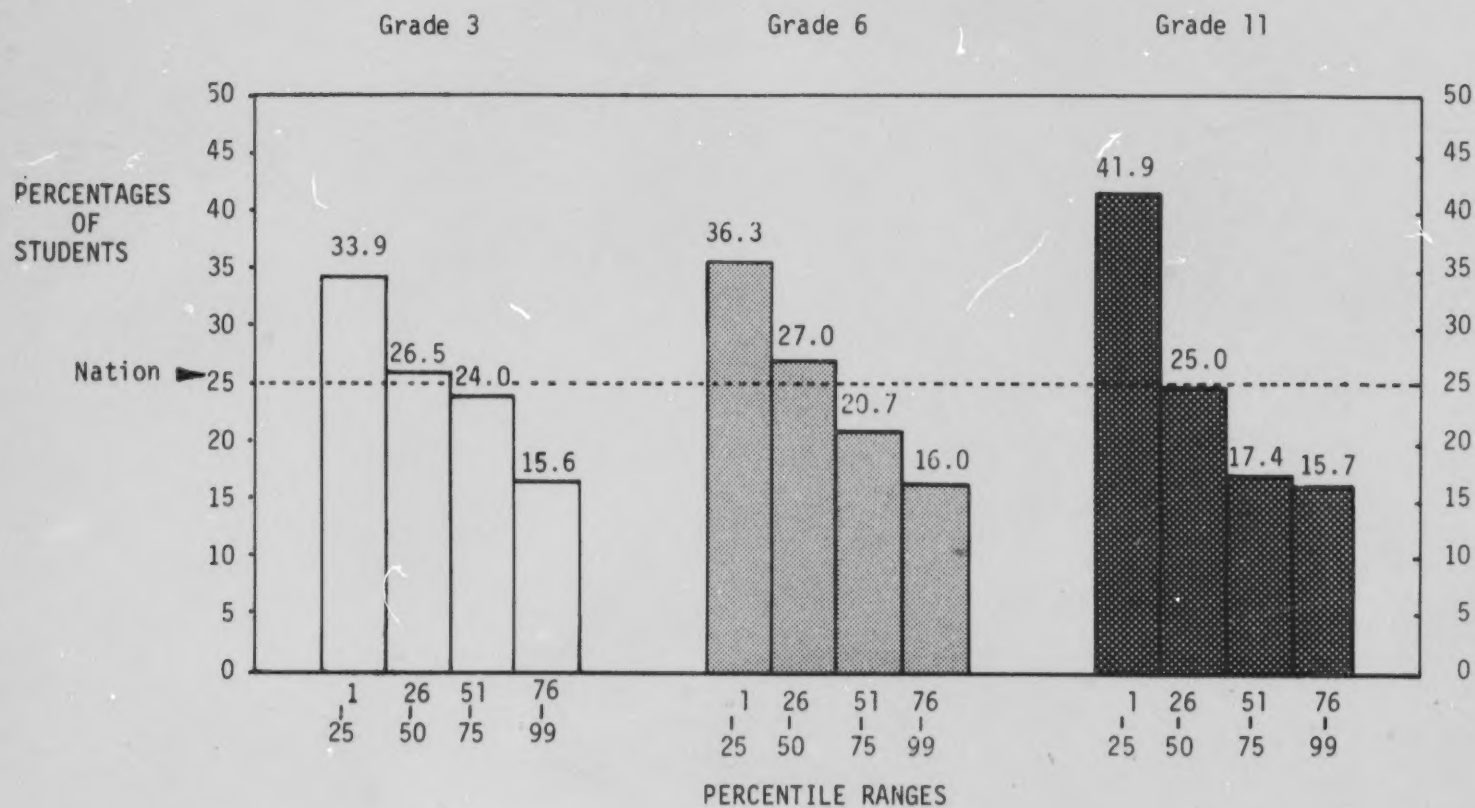


Figure 4.10

Histograms Representing Percentages of South Carolina Grade 3, 6, and 11 Students in Each of the National Quarters

Battery Total

distributions were quite similar for the 3rd and 6th grades; however, the 11th grade quarter distribution was different from the distributions of the 3rd and 6th grades. There was a larger percentage of 11th graders (41.9%) than 3rd (33.9%) or 6th (36.3%) graders in the lower quarter and a smaller percentage of 11th graders (17.4%) than 3rd (24.0%) or 6th (20.7%) graders in the upper middle quarter.

In Figure 4.11, the histograms representing the percentages of South Carolina 3rd, 6th, and 11th graders falling into each national quarter for Reading Total are given. The quarter distributions across Grades 3, 6, and 11 are very similar to those for Battery Total; and the comments made in reference to Figure 4.10 again apply.

In Figure 4.12, the histograms representing the percentages of South Carolina 3rd, 6th, and 11th graders falling into each national quarter for Language Total are given. The 3rd and 6th grade quarter distributions for Language Total are quite similar to the national quarter distribution in that close to 25% of the 3rd and 6th graders fell into each quarter. The actual percentages for Grade 3 proceeding from the lower quarter to the upper quarter were 32.6%, 24.1%, 23.5%, and 19.9%. The actual percentages for Grade 6 proceeding from the lower quarter to the upper quarter were 31.1%, 29.1%, 22.4%, and 19.4%. Again, performance in Language was lowest for 11th graders as indicated by the large percentage (37.8%) of students falling in the lower quarter relative to the percentages of 3rd (32.6%) and 6th grade students (31.1%) falling in the lower quarter. Nevertheless, at each grade level, there were approximately 3% fewer students falling in

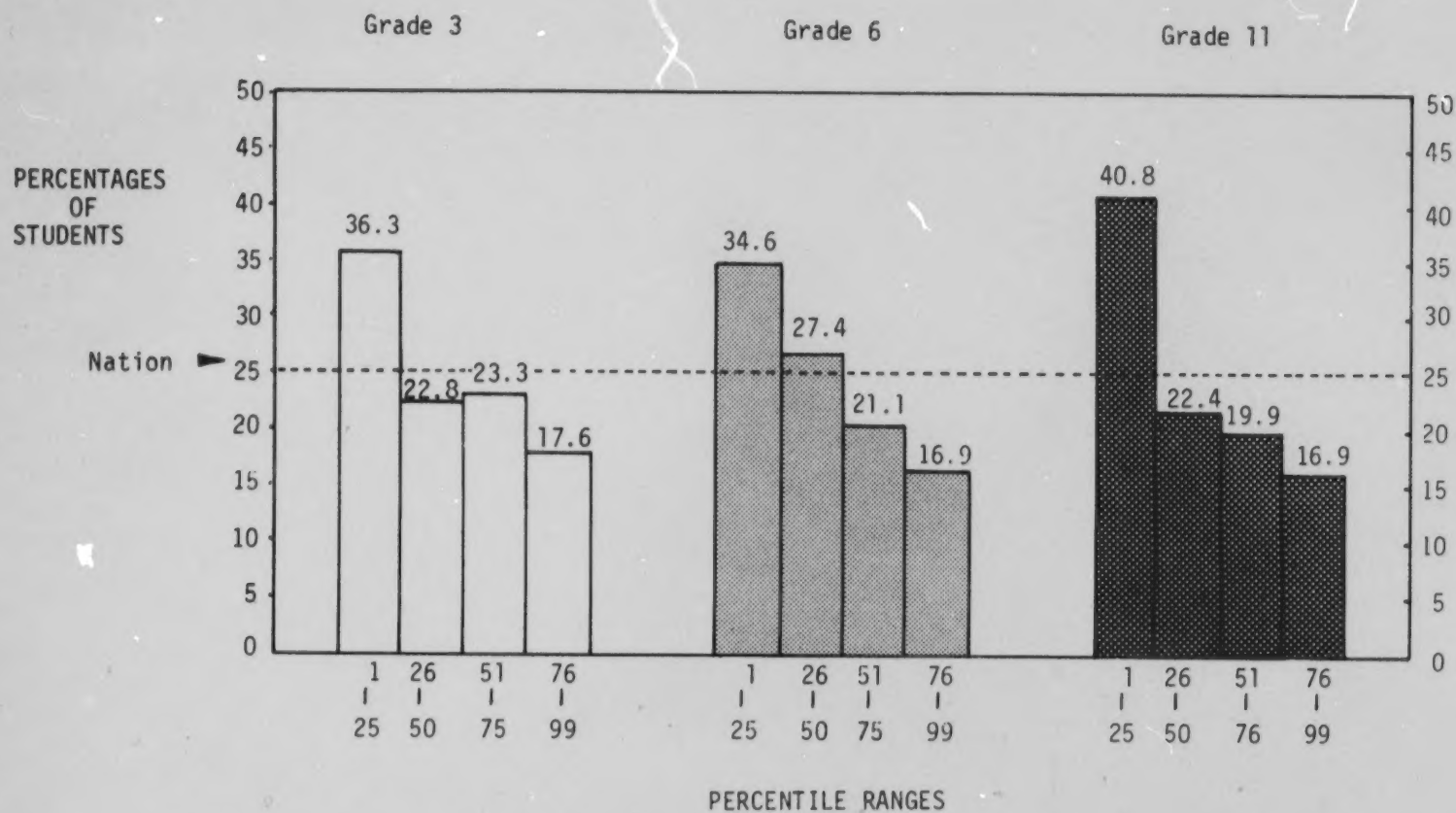


Figure 4.11

Histograms Representing Percentages of South Carolina Grade 3, 6, and 11 Students in Each of the National Quarters

Reading Total

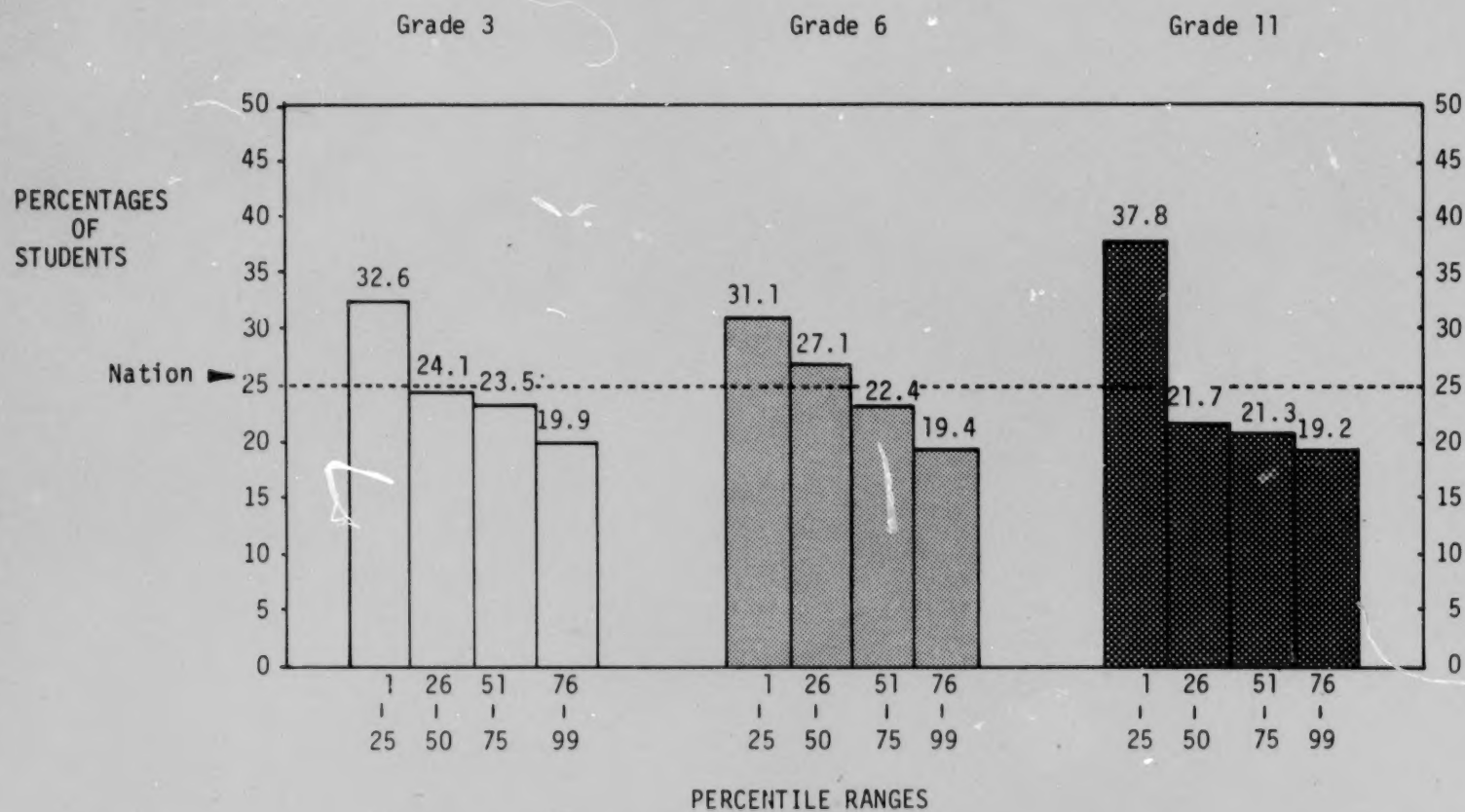


Figure 4.12

Histograms Representing Percentages of South Carolina Grade 3, 6, and 11 Students in Each of the National Quarters

Language Total

the lower quarter for Language Total than for Reading Total.

In Figure 4.13, the histograms representing the percentages of South Carolina 3rd, 6th, and 11th graders falling into each national quarter for Mathematics Total are given. At each grade level, the quarter distribution for Mathematics Total was the most distinctive when compared to those for Reading Total (Figure 4.11) and Language Total (Figure 4.12). The lower quarter and lower middle quarter contained well over 50% of the total population of students at both the 3rd (63.4%) and 6th (67.6%) grade levels. The percentages in each of the upper quarters for both the 3rd (12.0%) and 6th (11.4%) grades were less than half of the national expectation of 25.0%. For South Carolina 11th graders, the Mathematics Total quarter distribution was very similar to the Battery Total (Figure 4.10) quarter distribution.

In Figure 4.14, the histograms representing the percentages of South Carolina 3rd, 6th, and 11th graders falling into each national quarter for Reference Skills are given. At the 3rd grade level, there are no histograms pictured since a Reference Skills Subtest is not included on Level C of the CTBS/S. The Grade 6 quarter distribution in Reference Skills more closely approximated the national quarter distribution of 25% in each quarter than did the Grade 11 quarter distribution. Proceeding from the lower quarter to the upper quarter, the Grade 6 percentages were 20.1%, 26.5%, 24.0%, and 21.5%; whereas, the Grade 11 percentages were 32.3%, 26.4%, 24.0%, and 17.4%. Nevertheless, the percentages of 6th and 11th grade students scoring in each of the national quarters for Reference Skills more closely approximated the national

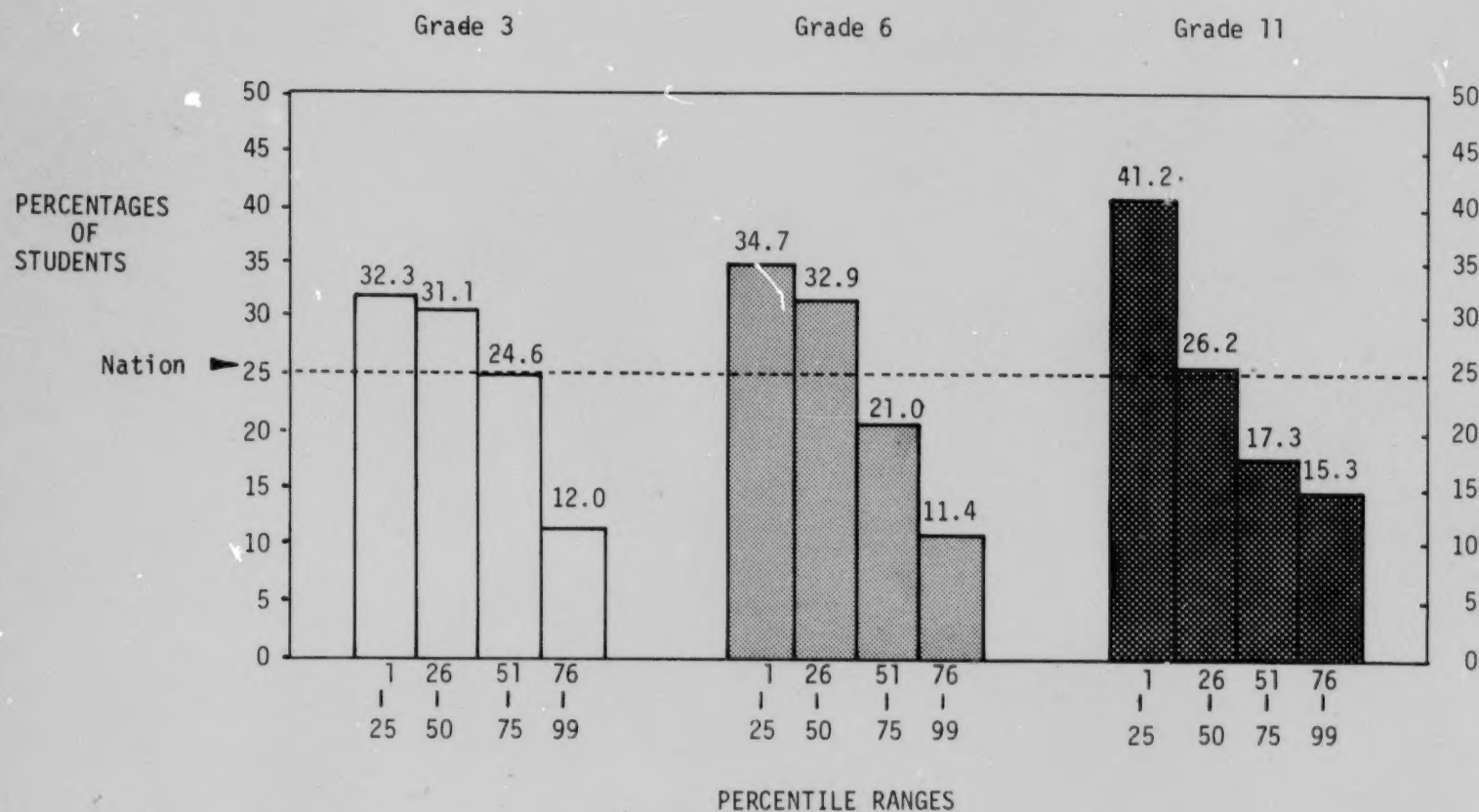
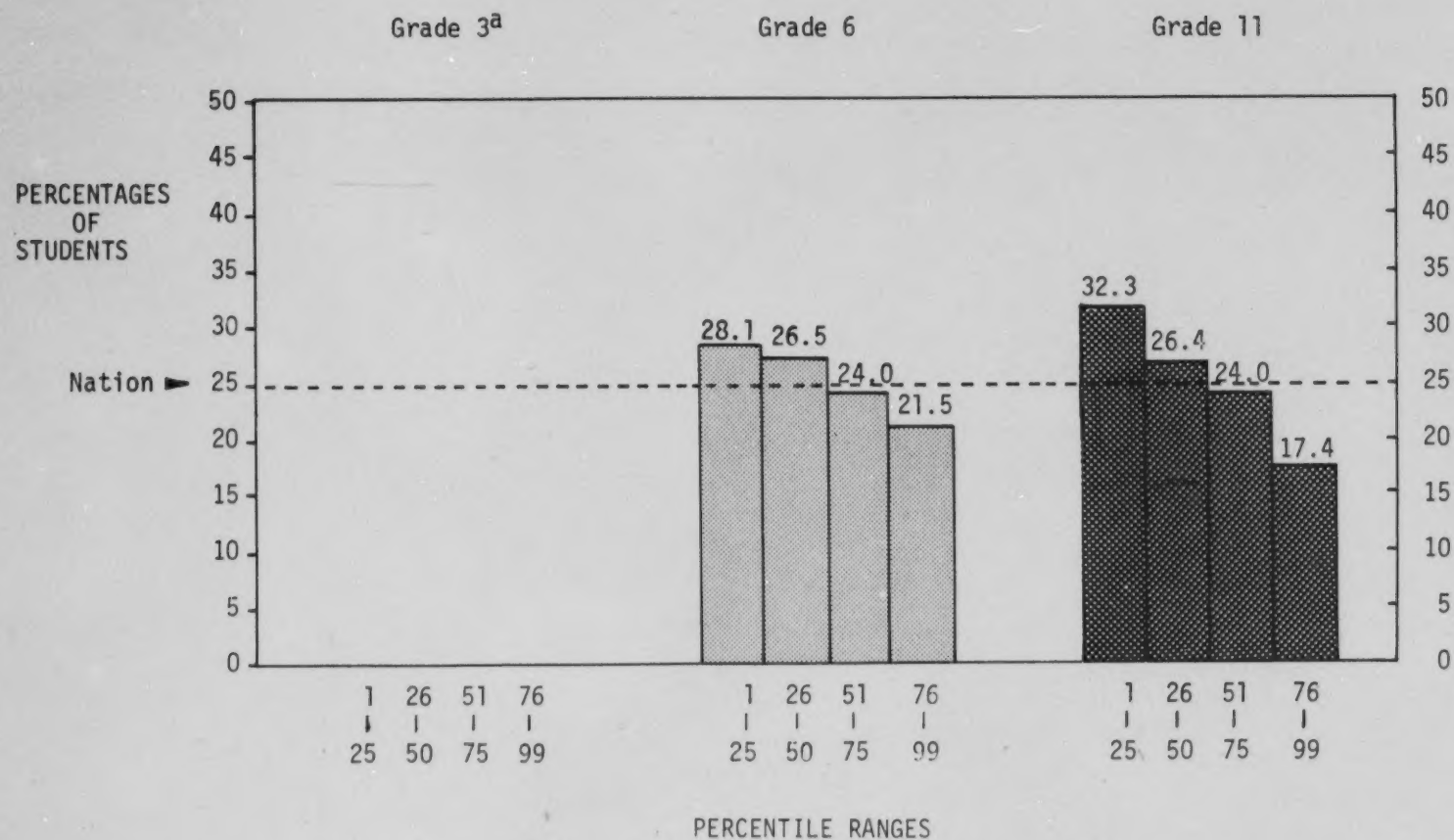


Figure 4.13

Histograms Representing Percentages of South Carolina Grade 3, 6, and 11 Students in Each of the National Quarters

Mathematics Total



^aThere is no Reference Skills Test on Level C of the CTBS/S.

Figure 4.14

Histograms Representing Percentages of South Carolina Grade 3, 6, and 11 Students in Each of the National Quarters

Reference Skills

percentages than the corresponding percentages for Battery Total (Figure 4.10), Reading Total (Figure 4.11), Language Total (Figure 4.12), or Mathematics Total (Figure 4.13). Additionally, the Grade 11 quarter distribution for Reference Skills, which had only 22.3% of the students falling in the lower quarter, was distinctly different from the Grade 11 quarter distributions for any of the other major skill areas which had from 37.8% of the students in Language (Figure 4.12) to 41.2% of the students in Mathematics (Figure 4.13) falling in the lower quarter.

In Figure 4.15, the histograms representing the percentages of South Carolina 3rd, 6th, and 11th grade students falling into each national quarter for Science are given. The Grade 6 quarter distribution in Science more closely approximated the national quarter distribution than did either of the Grade 3 or Grade 11 quarter distributions. Proceeding from the lower quarter to the upper quarter, the percentages of 6th graders scoring in each national quarter were 30.1%, 24.0%, 25.5%, and 20.4%. In Grade 3, 34% of the students scored in the lower quarter; while approximately 22.0% of the students fell into each of the other quarters. Thus, with the exception of the lower quarter, the Grade 3 students were evenly distributed. The 11th grade had the largest proportion of students (38.0%) scoring in the lower quarter, indicating that performance in Science was lowest for 11th graders.

In Figure 4.16, the histograms representing the percentages of South Carolina 3rd, 6th, and 11th graders falling into each national quarter for Social Studies are given. Across all three grades, the percentages of students scoring in each quarter were fairly similar

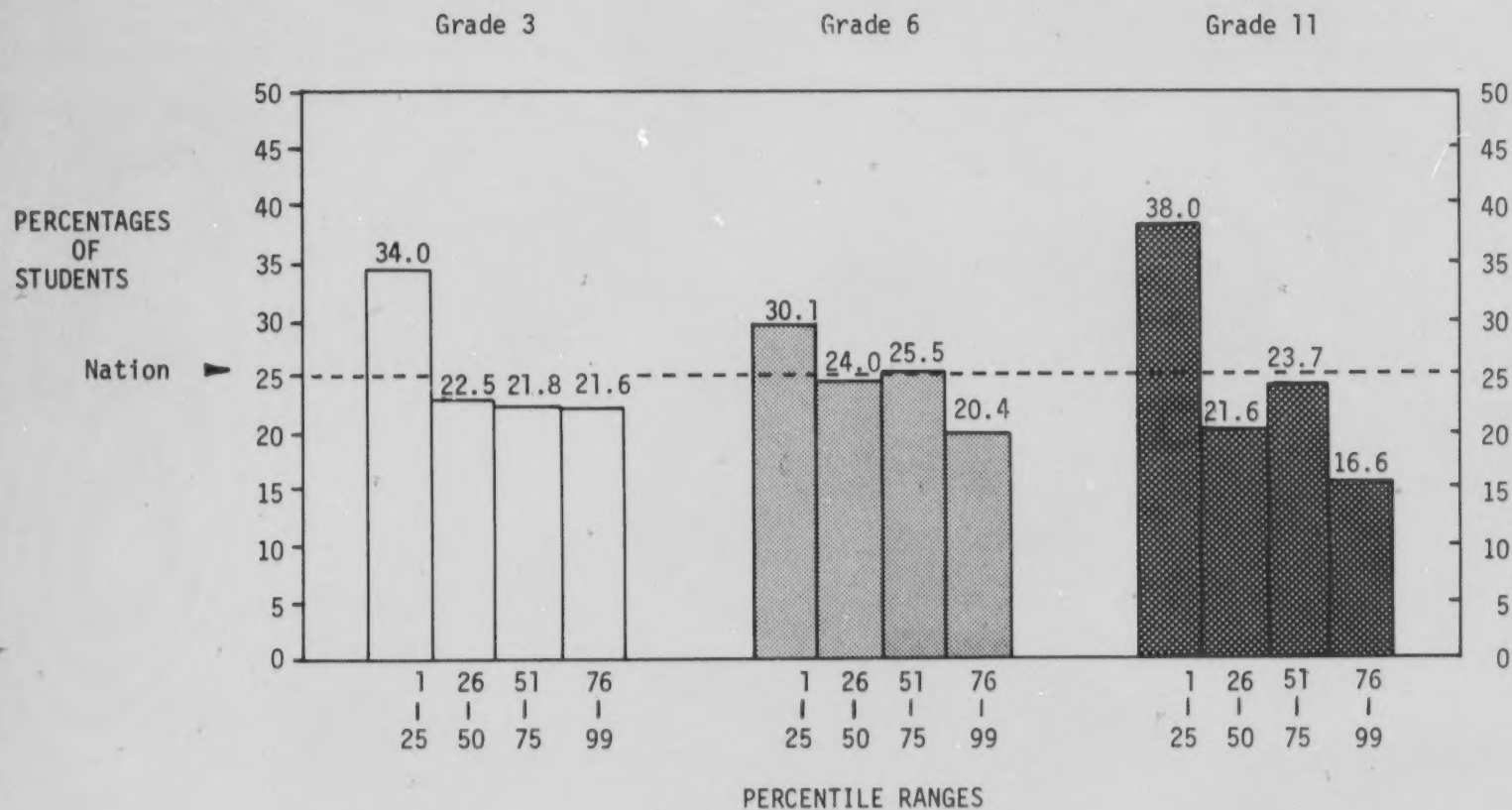


Figure 4.15

Histograms Representing Percentages of South Carolina Grade 3, 6, and 11 Students in Each of the National Quarters

Science

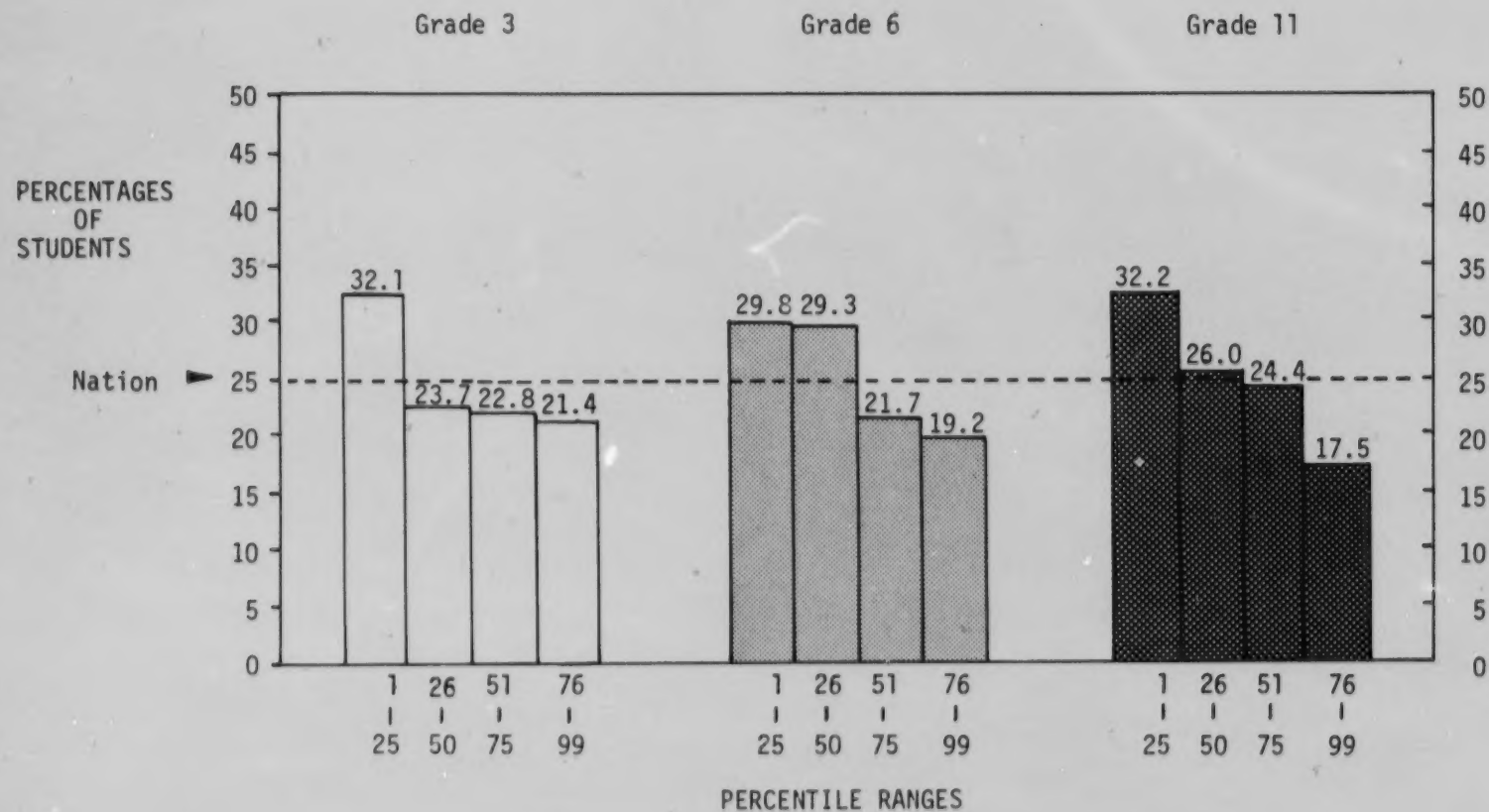


Figure 4.16

Histograms Representing Percentages of South Carolina Grade 3, 6, and 11 Students in Each of the National Quarters

Social Studies

with the exception of the upper middle quarter and the upper quarter for Grade 11. Nevertheless, the proportions of students falling into the lower two quarters and the upper two quarters for each grade were fairly constant being approximately 60.0% and 40.0%, respectively. Hence, performance in Social Studies was fairly similar relative to the nation for all three grades.

In general, across all three grade levels, performance in Reference Skills (Grade 3 excluded), Science, and Social Studies were similar to or higher than performance in Language. The Grade 3, 6, and 11 quarter distribution results for the three major skill areas indicated that Language was a strength and Mathematics was a weakness relative to the nation. Overall, the performance of 11th graders was low in comparison to that of 3rd and 6th graders. Therefore, the quarter distribution results support the earlier results interpretations of South Carolina performance across grade levels.

Comparison of Adjusted South Carolina Data to the National Normative Data

A new and somewhat different approach to comparing the performance of South Carolina students with that of the national normative sample was employed this year. The new approach involved the production of a score distribution which would be expected if the racial distribution in South Carolina were similar to the racial distribution of the national normative sample. The adjusted frequency distribution was determined by weighting the test scores of white students more heavily

than the test scores of nonwhite students to reflect the proportion of white and nonwhite students in the national sample. This weighting process adjusts for the fact that South Carolina has a disproportionately larger percentage of nonwhite students compared to the nation; and, thus, a disproportionately smaller percentage of white students. The implication is that, if the distribution of students in South Carolina and the distribution of students in the nation were made identical, the variation in test scores attributable to race could be eliminated. The difference between the adjusted State data and the national data provides a more accurate indication of the performance of the South Carolina students relative to the students in the national normative sample.

Three percent distributions for Battery Total scale scores are presented in Figure 4.17 for Grade 3 data. The solid line percent distribution is a duplication of the actual Grade 3 performance data which was presented in Figure 4.4. The second percent distribution (the spiral line) is the adjusted distribution which would be expected if the racial distribution in South Carolina more nearly approximated that of the national normative sample. The third percent distribution (the dash line) represents the national distribution. As expected, Figure 4.17 indicates that South Carolina's actual performance distribution (the solid line) is lower than both the racially adjusted distribution (the spiral line) and the national distribution (the dash line). However, the racially adjusted distribution is only slightly lower than the national distribution. Therefore, adjusting South Carolina's scores on the racial characteristic shifted South Carolina's

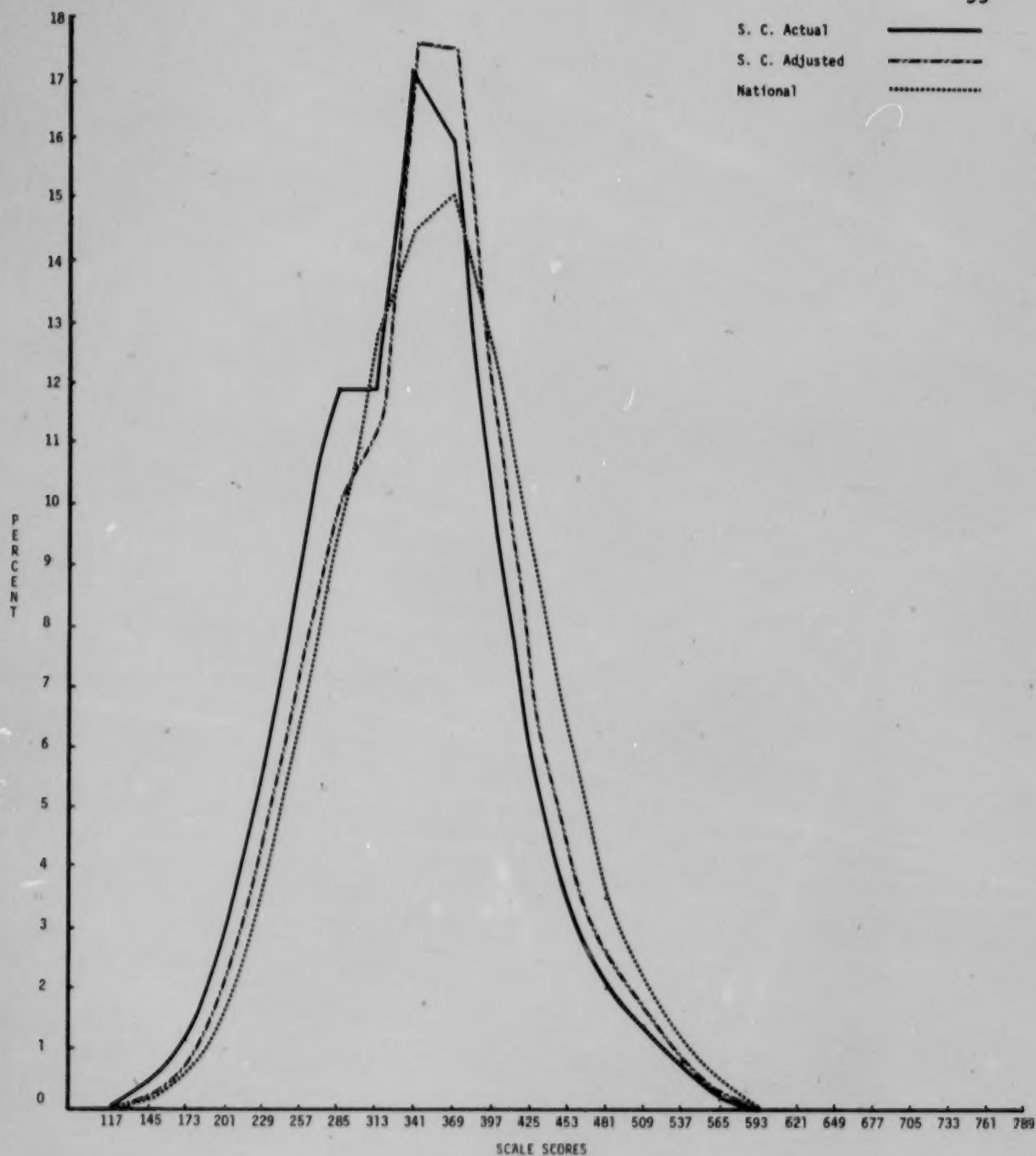


Figure 4.17

Percent Distribution of South Carolina Actual, South Carolina Adjusted,
and National Battery Total Scale Scores

Grade 3

distribution close to the national distribution.

The results for Grade 6 are presented in Figure 4.18. Again South Carolina's actual distribution is at the lower end of the scale when compared with the racially adjusted and national distributions. As in Grade 3, the racially adjusted distribution for Grade 6 more closely approximated the national distribution.

Figure 4.19 indicates that the pattern of the Grade 11 distribution is consistent with the Grade 3 and Grade 6 distributions. If anything, the pattern is accentuated at Grade 11. The percent distributions for Grades 3, 6, and 11 are tabled in Appendix B.

The data in Figures 4.17, 4.18, and 4.19 indicate that, when the racial population difference between South Carolina and the nation is taken into account, South Carolina student performances relative to the nation does not appear as low as the actual test scores suggest.

Now that the general picture has been presented graphically for Battery Total scale scores, information specific to the subtests and skill area tests is presented in a tabular format. Using the adjusted scale score distributions, means were obtained and converted into their normal curve equivalents (NCE's). These results are presented in Table 4.8. For convenience, the actual NCE's from Table 4.7 are also reproduced in Table 4.8. Graphs of the tabled data for the skill areas and Battery Total are presented in Figures 4.20, 4.21, and 4.22. The ensuing discussion of the differences between South Carolina actual NCE scores and South Carolina adjusted NCE scores centers on the these figures.

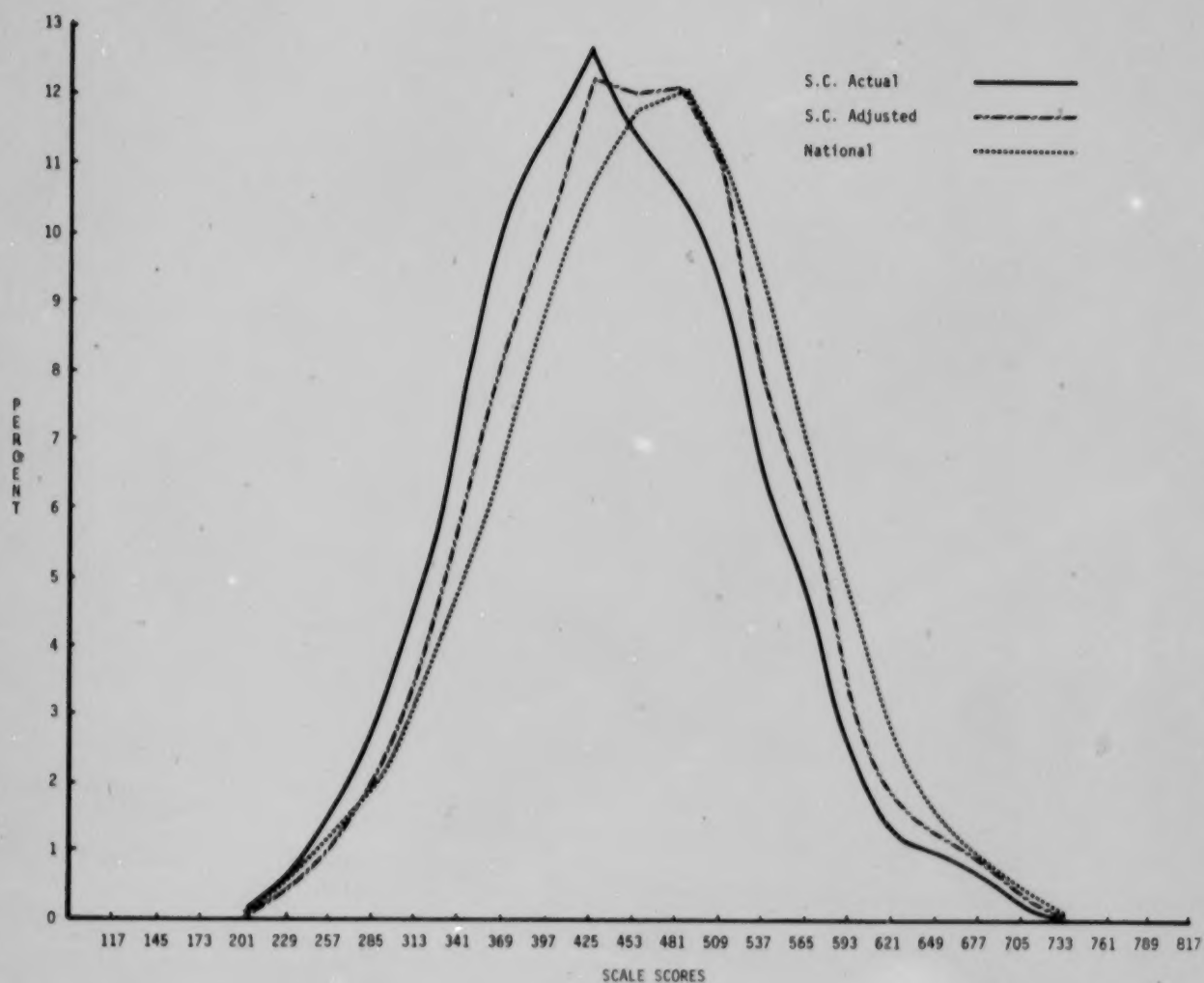


Figure 4.18

Percent Distribution of South Carolina Actual, South Carolina Adjusted,
and National Battery Total Scale Scores

Grade 6

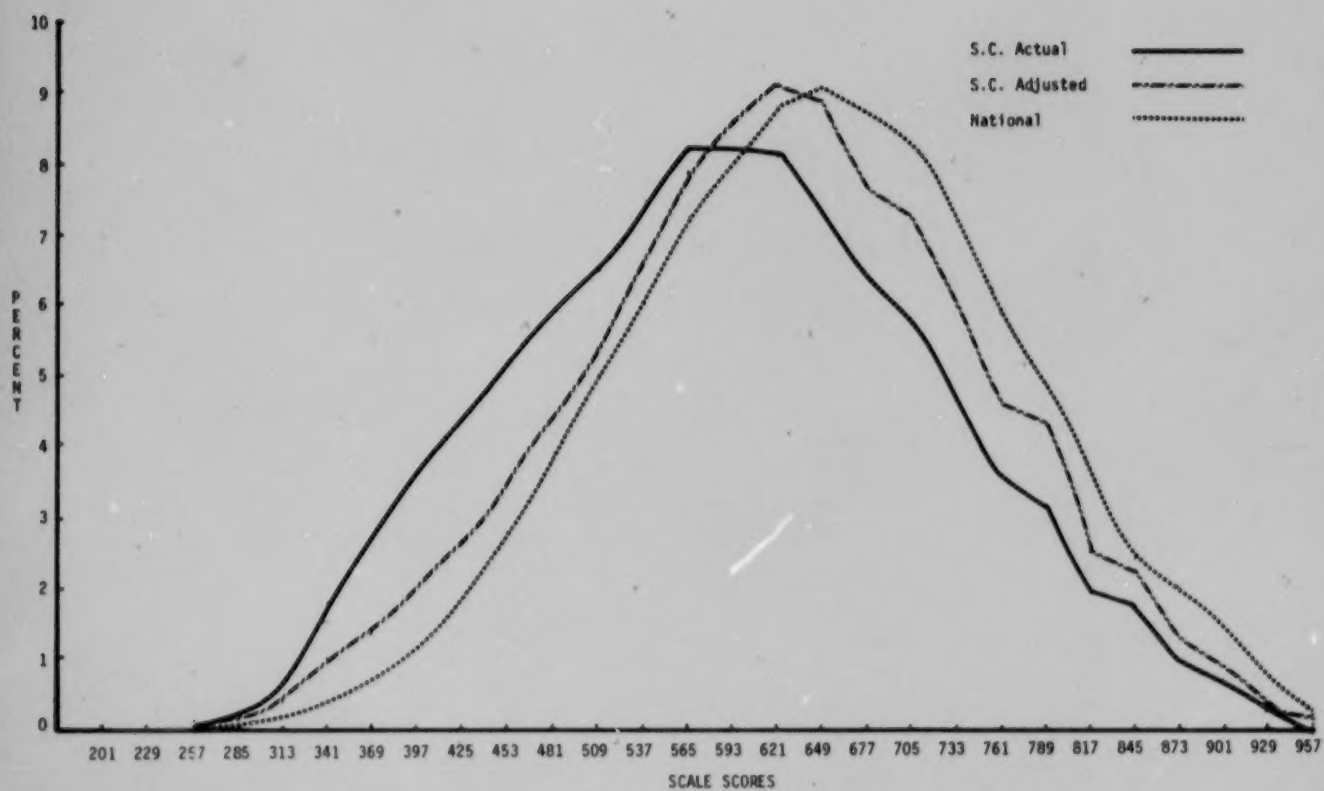


Figure 4.19

Percent Distribution of South Carolina Actual, South Carolina Adjusted,
and National Battery Total Scale Scores

Grade 11

Table 4.8
Normal Curve Equivalent Scores for Mean Actual
and Adjusted Scale Scores
for South Carolina Students in Grades 3, 6, and 11
for the CTBS/S Subtests and Tests

All Students

Subtests and Tests	Grade 3		Grade 6		Grade 11	
	Actual NCE	Adjusted NCE	Actual NCE	Adjusted NCE	Actual NCE	Adjusted NCE
National Mean ^a	50	50	50	50	50	50
Reading Vocabulary	45	MISS ^b	42	46	42	47
Reading Comprehension	NA ^c	NA ^c	47	51	43	48
Reading Total	45	49	44	49	42	47
Language Mechanics	47	MISS ^b	47	50	45	49
Language Expression	46	MISS ^b	47	50	45	49
Spelling	46	MISS ^b	46	48	45	48
Language Total	46	49	46	49	44	49
Mathematics Computation	45	MISS ^b	44	46	43	47
Mathematics Concepts	NA ^c	NA ^c	44	47	42	47
Mathematics Application	NA ^c	NA ^c	44	47	41	46
Mathematics Total	44	47	43	46	41	46
Battery Total	45	48	44	47	41	46
Reference Skills	NA ^c	NA ^c	49	51	46	50
Science	46	49	47	51	45	49
Social Studies	47	50	46	49	46	51
<u>n</u> ^d	41,660	41,660	47,971	47,971	37,271	37,271

^aThe national mean normal curve equivalent (NCE) is 50 for all CTBS/S subtests and tests. NCE's were converted from mean scale scores but are referred to as mean NCE's.

^bData are missing for these subtests.

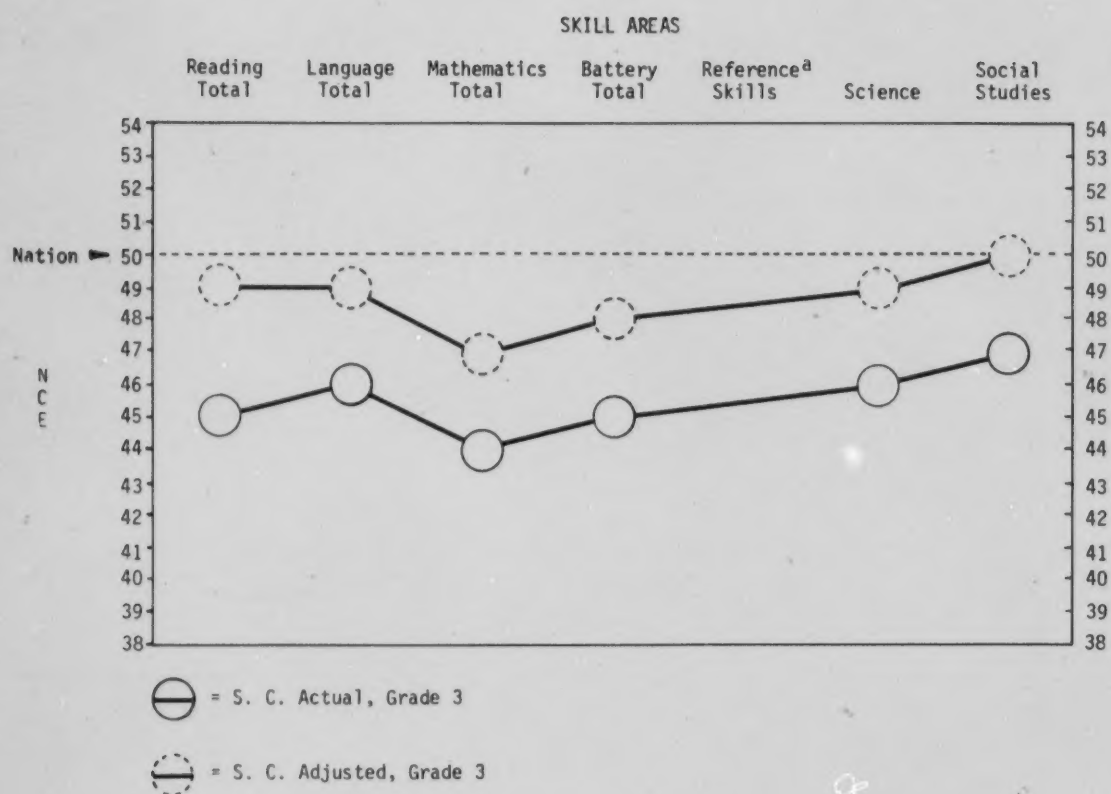
^cData are not available for these subtests.

^dn = Total number of students completing any CTBS/S subtest or test.

Figure 4.20 provides a graph of 3rd grade mean NCE's for the skill areas and the Battery Total. In Figure 4.20, the solid line circles represent the actual performance NCE means; and the broken line circles represent the adjusted performance NCE means. Although a similar pattern exists for all skill areas and the Battery Total for both the actual and the adjusted groups of scores, the adjusted NCE scores are definitely higher than the actual NCE scores. The adjusted NCE scores are close to the national mean NCE of 50. For both actual and adjusted score groups, Social Studies is the strongest skill area; and Mathematics is the weakest skill area.

Figure 4.21 provides the mean NCE's for the actual and racially adjusted data for Grade 6. Although the adjusted NCE scores are higher than their unadjusted counterparts, the difference between the two sets of scores is not constant. The difference between the actual and adjusted Reading NCE scores is quite large compared to the difference between the actual and adjusted NCE scores in the other skill areas. There is little difference between the actual and adjusted scores for Reference Skills.

Figure 4.22 provides a graphical display of the relationship between the actual and racially adjusted mean NCE's for Grade 11. The differences between the actual and adjusted means are again in the same direction and are even more pronounced at Grade 11 than at the lower grades. The smallest discrepancies between the actual and adjusted NCE means were in the skills areas of Reference Skills and Science. Although the discrepancies were the same for the skill areas of Reading, Language, and Mathematics and for Battery Total, the lowest performances were in the areas of Mathematics and Battery Total.



^aData are not available for this subtest.

Figure 4.20

Graph of South Carolina Actual and Adjusted Mean Normal Curve Equivalents
for the CTBS/S Skill Areas and Battery Total

Grade 3

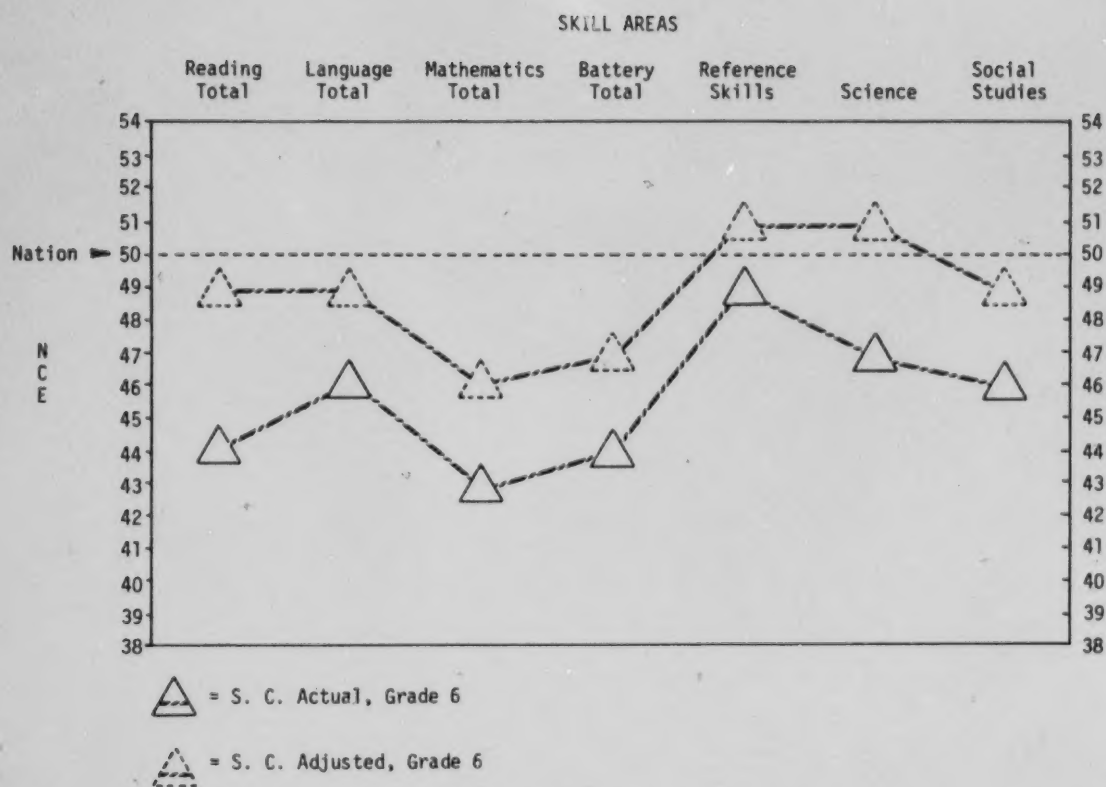


Figure 4.21

Graph of South Carolina Actual and Adjusted Mean Normal Curve Equivalents for the CTBS/S Skill Areas and Battery Total

Grade 6

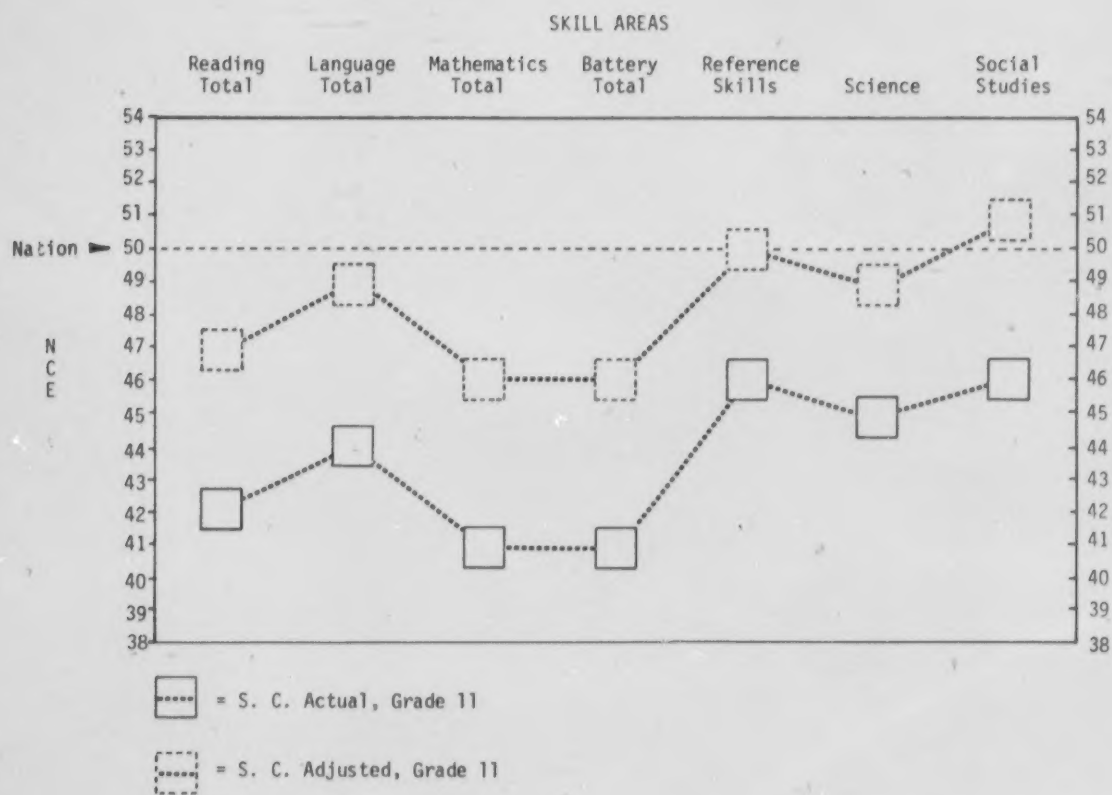


Figure 4.22

Graph of South Carolina Actual and Adjusted Mean Normal Curve Equivalents
for the CTBS/S Skill Areas and Battery Total

Grade 11

Although the results presented in the previous sections of this chapter could be reproduced using the adjusted approach, no further purpose would probably be served by doing so. The point has been made that, when one important characteristic of the national sample, racial composition, is taken into account, the performance of the students in South Carolina's educational system is not as low as previous data has suggested. Even if all factors that account for performance differences between South Carolina's students and the nation's students were considered and South Carolina's students were found to perform as well as the nation's students, there would still be considerable room for improving South Carolina's educational system.

Comparison of Subgroup Results for Grades 3, 6, and 11

Many educators find grouping test data on variables such as race, sex, and Title I status very helpful. One advantage of grouping test results by such variables is that relative strengths and weaknesses often vary from subgroup to subgroup. For example, a well known fact is that females' performance in areas requiring verbal skills exceeds their performance in quantitative areas; whereas, the reverse is generally true for males.

When grouping data on various characteristics, comparisons between subgroups such as males and females should not be made. Although the results of most of these subgroup comparisons could easily be inferred from the available literature, the result for a single subgroup such as males should only be compared with the subgroup's national norm

counterpart, the national sample of males. Making comparisons between the performance of a subgroup within the State and the subgroup's appropriate national norm group would be useful. Unfortunately, no such normative data exists; therefore, determining how well South Carolina males, females, whites, nonwhites, Non-Title I students, or Title I students performed when compared to their national counterparts is impossible.

Since the primary purpose of this section is to provide information on the relative strengths and weaknesses for subgroups, the students tested in Grades 3, 6, and 11 were stratified on each of the three variables race, sex, and Title I status. The subgroups formed from this stratification were white, nonwhite, male, female, Non-Title I, and Title I. The test results in this section are discussed by each of these subgroups. Within each subgroup, comparisons of student performance are made across grades. In other words, Grade 3 white students are compared with Grades 6 and 11 white students. Strengths and weaknesses of each subgroup relative to the nation are also discussed for each grade. Since comparisons across subgroups should not be made, a conscious effort was made to exclude such comparisons. For example, Grade 3 white students are not compared with Grade 3 nonwhite students.

Mean scales scores and NCE's specific to each subgroup are presented in Tables 4.9 through 4.14 for the subtests, tests, and Battery Total. For the purpose of discussing subgroup strengths and weaknesses, Figures 4.23 through 4.28, which include only data for the skill areas and Battery Total, are presented. The format of the figures is similar to those of Figures 4.20 through 4.22. The NCE's reported in

Figures 4.23 through 4.28 are all presented relative to the national normative sample and facilitate comparisons across skill areas and Battery Total both within and across grades.

White Subgroup

The most distinctive feature of the white students in Figure 4.23 is the consistency of their performance across the three grades. Without exception, the differences of the mean NCE scores across the skill areas and grades for which data were available were two or less. With respect to differences in performance by skill areas, the white students' highest performance was on the Reference Skills Test, Science Test, and Social Studies Test. The performance of these students on the Mathematics Test was low relative to their performance on the other tests, with Battery Total being the second lowest area. The white students' achievement scores on the Reading Test and on the Language Test fell between the skill areas containing the highest and lowest scores.

Nonwhite Subgroup

The most striking feature of Figure 4.24 is the low performance of Grade 11 nonwhite students when compared to the nonwhite students in Grades 3 and 6. For the areas of Reading, Language, Mathematics, and Battery Total, 11th graders performed from six to nine NCE points below 3rd and 6th graders. Performance differences between Grade 11 and Grades 3 and 6 were less varied, ranging from one to five points, for the skill areas of Reference Skills, Science, and Social Studies. Among the three major skill areas of Reading, Language, and Mathematics,

Table 4.9

Mean Scale Scores and Normal Curve Equivalents
for South Carolina Students in Grades 3, 6, and 11
for the CTBS/S Subtests and Tests

White Subgroup

Subtests and Tests	Mean Scale Scores			Normal Curve Equivalents ^a		
	Grade 3	Grade 6	Grade 11	Grade 3	Grade 6	Grade 11
Reading Vocabulary	385	491	673	52	51	52
Reading Comprehension	NA ^b	521	666	NA ^b	54	53
Reading Total	388	499	658	52	53	53
Language Mechanics	438	512	622	53	52	53
Language Expression	449	525	652	52	54	55
Spelling	418	493	621	50	50	51
Language Total	419	498	632	52	53	54
Mathematics Computation	362	458	596	50	49	51
Mathematics Concepts	NA ^b	473	650	NA ^b	50	52
Mathematics Applications	NA ^b	482	626	NA ^b	51	50
Mathematics Total	364	462	615	50	50	51
Battery Total	360	474	653	52	51	51
Reference Skills	NA ^b	532	682	NA ^b	55	54
Science	413	514	633	54	55	54
Social Studies	408	504	645	54	53	55
<u>n</u> ^c	24,894	27,467	21,178	24,894	27,467	21,178

^aThe national mean normal curve equivalent (NCE) is 50 for all CTBS/S subtests and tests. NCE's were converted from mean scale scores but are referred to as mean NCE's.

^bData for these subtests are not available.

^cn = Total number of students completing any CTBS/S subtest or test.

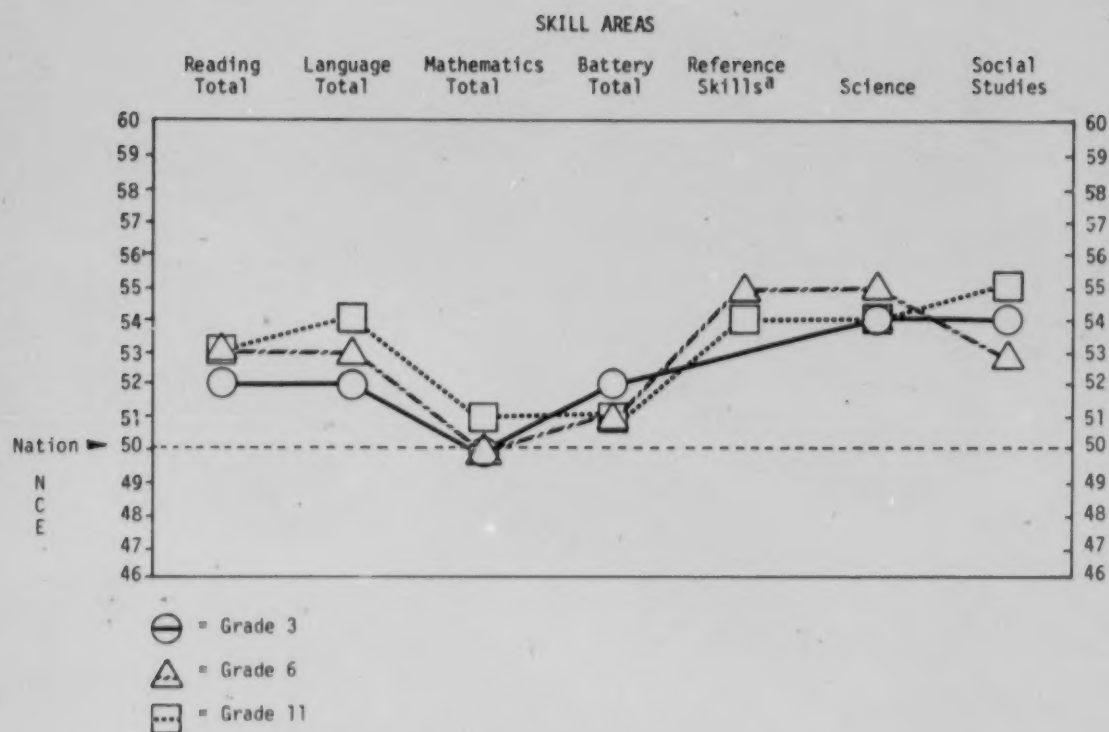


Figure 4.23

Graph of Mean Normal Curve Equivalents for South Carolina Students in Grades 3, 6, and 11 for the CTBS/S Skill Areas and Battery Total

White Subgroup

Table 4.10

Mean Scale Scores and Normal Curve Equivalents
for South Carolina Students in Grades 3, 6, and 11
for the CTBS/S Subtests and Tests

Nonwhite Subgroup

Subtests and Tests	Mean Scale Scores			Normal Curve Equivalents ^a		
	Grade 3	Grade 6	Grade 11	Grade 3	Grade 6	Grade 11
Reading Vocabulary	328	404	526	34	31	27
Reading Comprehension	NA ^b	436	524	NA ^b	37	29
Reading Total	327	411	519	34	33	26
Language Mechanics	382	449	512	39	39	34
Language Expression	387	453	523	35	37	30
Spelling	386	453	545	40	40	35
Language Total	364	436	514	37	37	31
Mathematics Computation	331	416	492	37	37	31
Mathematics Concepts	NA ^b	407	519	NA ^b	35	29
Mathematics Applications	NA ^b	411	491	NA ^b	35	27
Mathematics Total	325	405	488	35	35	26
Battery Total	300	395	503	35	33	26
Reference Skills	NA ^b	451	550	NA ^b	39	34
Science	335	432	511	33	36	32
Social Studies	347	432	523	37	36	33
<u>n^c</u>	15,936	19,678	14,372	15,936	19,678	14,372

^aThe national mean normal curve equivalent (NCE) is 50 for all CTBS/S subtests and tests. NCE's were converted from mean scale scores but are referred to as mean NCE's.

^bData for these subtests are not available.

^cn = Total number of students completing any CTBS/S subtest or test.

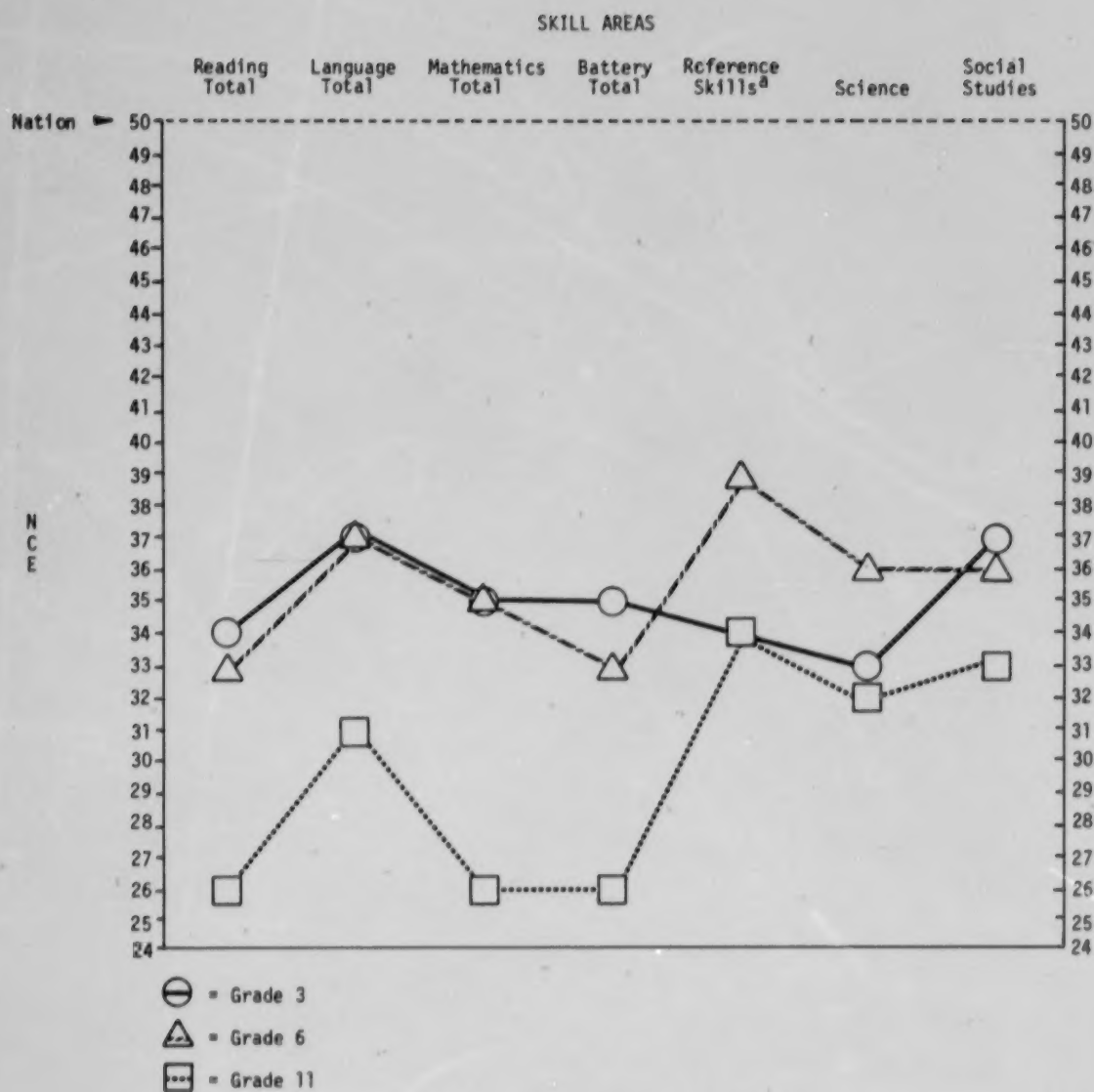


Figure 4.24

Graph of Mean Normal Curve Equivalents for South Carolina Students in Grades 3, 6, and 11 for the CTBS/S Skill Areas and Battery Total

Nonwhite Subgroup

the highest performance of nonwhite students was in Language, with Reading and Mathematics achievement being consistently lower. In general, the performance of 3rd grade and 6th grade nonwhite students was quite similar.

Male Subgroup

The performance of male students provided in Figure 4.25 is characterized as being relatively consistent across the areas of Reading, Language, Mathematics, and Battery Total and as being quite consistent across the three grades tested with the exception of a slight trend towards lower performance at the 11th grade. As has generally been the case with the South Carolina data, performance in the areas of Reference Skills, Science, and Social Studies surpassed student performances in the areas of Reading, Language, Mathematics, and Battery Total.

Female Subgroup

Whereas, male performance was quite consistent in the major skill areas of Reading, Language, and Mathematics, the performance of the South Carolina female population in Figure 4.26 was much more varied. The tendency for 11th grade females to achieve at a lower level than 3rd and 6th grade females was evidenced by the Reading Total, Mathematics Total, and Battery Total scores. Eleventh grade females also appeared to have lost ground with respect to their 6th grade counterparts in Reference Skills and Science. Additionally, in the three skills areas of Reading, Language, and Mathematics, the performance of females in Language was consistently the highest; and the performance of females

Table 4.11
Mean Scale Scores and Normal Curve Equivalents
for South Carolina Students in Grades 3, 6, and 11
for the CTBS/S Subtests and Tests

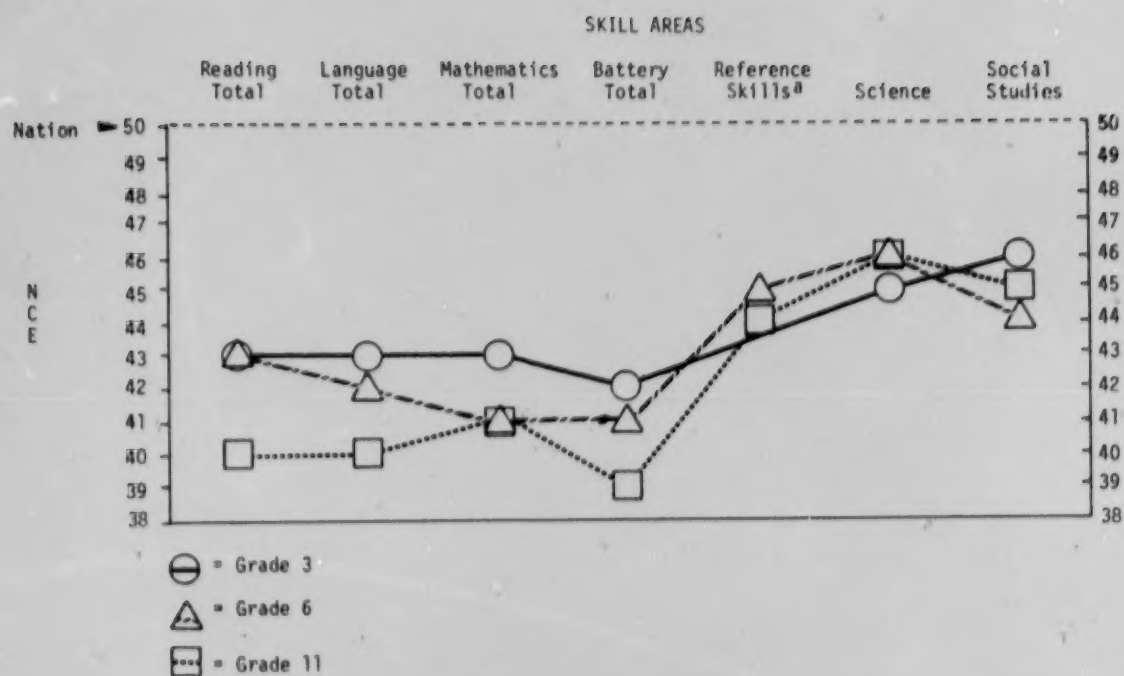
Male Subgroup

Subtests and Tests	Mean Scale Scores			Normal Curve Equivalents ^a		
	Grade 3	Grade 6	Grade 11	Grade 3	Grade 6	Grade 11
Reading Vocabulary	358	449	609	44	41	41
Reading Comprehension	NA ^b	474	593	NA ^b	45	40
Reading Total	357	453	592	43	43	40
Language Mechanics	403	467	557	44	43	42
Language Expression	415	484	586	43	44	42
Spelling	394	457	565	42	41	40
Language Total	384	454	561	43	42	40
Mathematics Computation	347	430	551	44	41	42
Mathematics Concepts	NA ^b	440	602	NA ^b	43	43
Mathematics Applications	NA ^b	447	582	NA ^b	43	43
Mathematics Total	346	430	566	43	41	41
Battery Total	328	427	583	42	41	39
Reference Skills	NA ^b	482	616	NA ^b	45	44
Science	380	475	592	45	46	46
Social Studies	381	467	588	46	44	45
<u>n</u> ^c	20,852	24,139	18,526	20,852	24,139	18,526

^aThe national mean normal curve equivalent (NCE) is 50 for all CTBS/S subtests and tests. NCE's were converted from mean scale scores but are referred to as mean NCE's.

^bData are not available for these subtests.

^cn = Total number of students completing any CTBS/S subtest or test.



^aData are not available for Reference Skills in Grade 3.

Figure 4.25

Graph of Mean Normal Curve Equivalents for South Carolina Students in Grades 3, 6, and 11 for the CTBS/5 Skill Areas and Battery Total

Male Subgroup

Table 4.12

Mean Scale Scores and Normal Curve Equivalents
for South Carolina Students in Grades 3, 6, and 11
for the CTBS/S Subtests and Tests

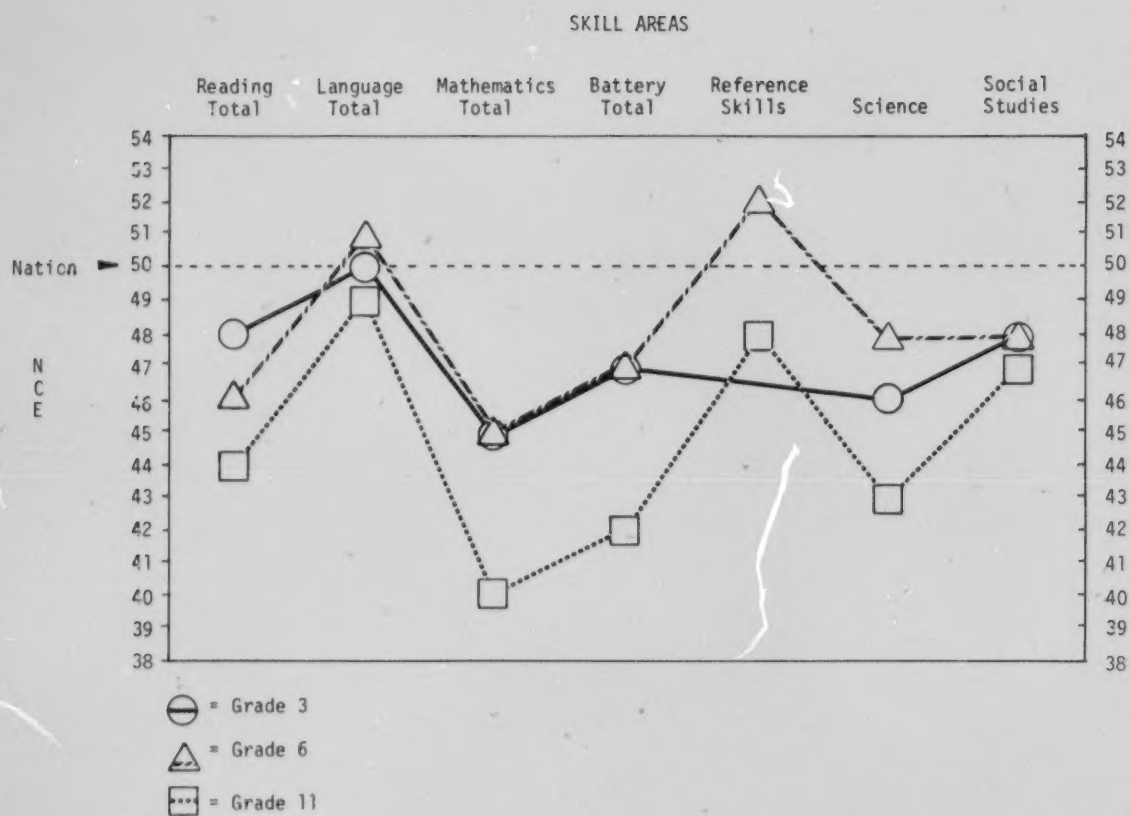
Female Subgroup

Subtests and Tests	Mean Scale Scores			Normal Curve Equivalents ^a		
	Grade 3	Grade 6	Grade 11	Grade 3	Grade 6	Grade 11
Reading Vocabulary	366	460	617	46	44	42
Reading Comprehension	NA ^b	497	623	NA ^b	49	46
Reading Total	371	470	611	48	46	44
Language Mechanics	430	506	598	51	51	49
Language Expression	434	506	612	48	49	47
Spelling	417	496	615	50	51	50
Language Total	411	490	606	50	51	49
Mathematics Computation	353	450	556	46	47	43
Mathematics Concepts	NA ^b	450	590	NA ^b	45	41
Mathematics Applications	NA ^b	458	561	NA ^b	45	39
Mathematics Total	352	446	560	45	45	40
Battery Total	345	453	601	47	47	42
Reference Skills	NA ^b	514	640	NA ^b	52	48
Science	384	484	574	46	48	43
Social Studies	387	480	602	48	48	47
<u>n</u> ^c	20,739	23,614	18,472	20,739	23,614	18,472

^aThe national mean normal curve equivalent (NCE) is 50 for all CTBS/S subtests and tests. NCE's were converted from mean scale scores but are referred to as mean NCE's.

^bData are not available for these subtests.

^cn = Total number of students completing any CTBS/S subtest or test.



^aData are not available for Reference Skills in Grade 3.

Figure 4.26

Graph of Mean Normal Curve Equivalents for South Carolina Students in Grades 3, 6, and 11 for the CTBS/S Skill Areas and Battery Total

Female Subgroup

in Mathematics was consistently the lowest.

Non-Title I Subgroup

With the exception of the 11th grade, the performance of Non-Title I students presented in Figure 4.27 was close to the national mean NCE of 50. For Grades 3 and 6, the NCE's in all tests and the Battery Total ranged from 47 to 52.

Because most Title I funds are allocated for the areas of Reading and Mathematics in the elementary grades, there are few Title I funds available for 11th grade students. Therefore, the Non-Title I 11th grade students included a large number of students who under normal circumstances would be classified as Title I students if funds were available. Because of this inconsistency in classification, Title I and Non-Title I data were not included for the 11th grade.

Title I Subgroup

Title I students in Grades 3 and 6 were coded as being in Title I Reading Programs only, Title I Mathematics Programs only, or Title I Reading and Mathematics Programs. For the purpose of reporting results, these three coded categories were grouped in different ways to form four different subgroups of Title I students: The Title I Subgroup, the Title I Reading Subgroup, the Title I Mathematics Subgroup, and the Title I Reading and Mathematics Subgroup. The discussion of the Title I results, however, will focus only on the results for the Title I Subgroup in Figure 4.28.

The Title I Subgroup includes 3rd and 6th grade students who were

Table 4.13
 Mean Scale Scores and Normal Curve Equivalents
 for South Carolina Students in Grades 3, 6, and 11
 for the CTBS/S Subtests and Tests

Non-Title I Subgroup

Subtests and Tests	Mean Scale Scores			Normal Curve Equivalents ^a		
	Grade 3	Grade 6	Grade 11 ^b	Grade 3	Grade 6	Grade 11 ^b
Reading Vocabulary	380	476	NA	50	47	NA
Reading Comprehension	NA ^b	507	NA	NA ^b	52	NA
Reading Total	383	484	NA	51	49	NA
Language Mechanics	435	503	NA	52	50	NA
Language Expression	443	513	NA	51	51	NA
Spelling	420	491	NA	50	50	NA
Language Total	417	490	NA	52	51	NA
Mathematics Computation	360	453	NA	49	47	NA
Mathematics Concepts	NA ^b	462	NA	NA ^b	48	NA
Mathematics Applications	NA ^b	470	NA	NA ^b	48	NA
Mathematics Total	361	454	NA	49	47	NA
Battery Total	356	461	NA	51	49	NA
Reference Skills	NA ^b	521	NA	NA ^b	53	NA
Science	402	499	NA	51	52	NA
Social Studies	401	493	NA	52	50	NA
<u>n</u> ^c	30,269	36,110	NA	30,269	36,110	NA

^aThe national mean normal curve equivalent (NCE) is 50 for all CTBS/S subtests and tests. NCE's were converted from mean scale scores but are referred to as mean NCE's.

^bData are not available for these subtests.

^cn = Total number of students completing any CTBS/S subtest or test.

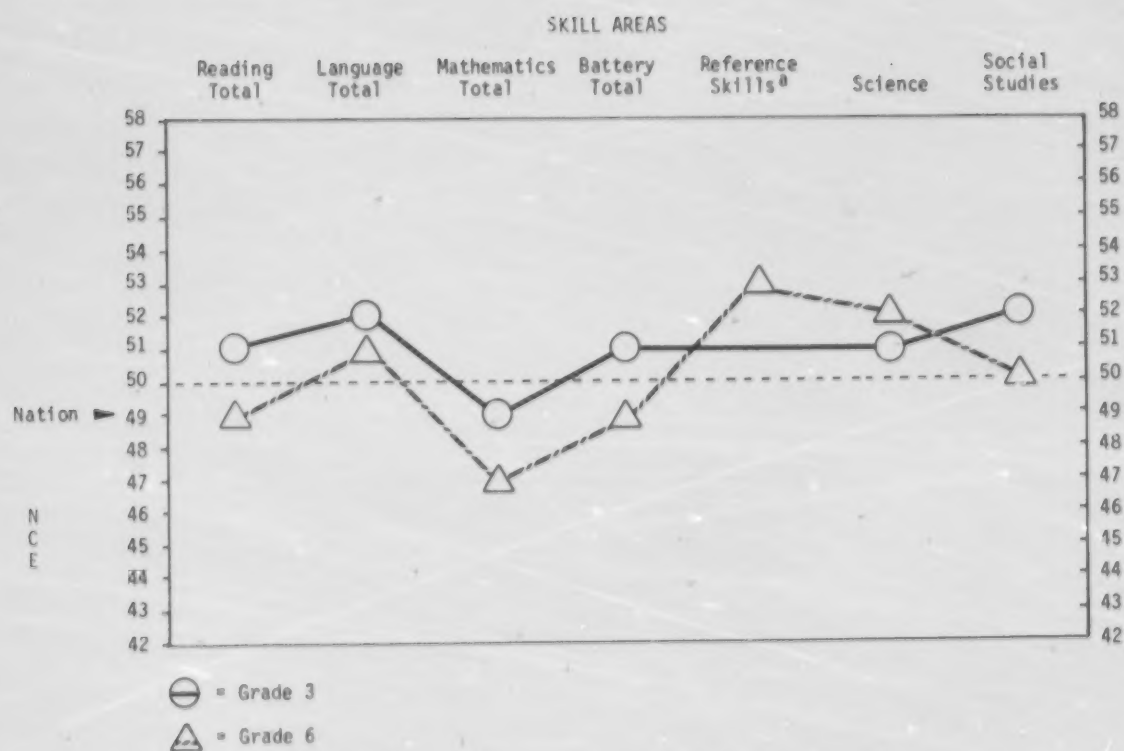


Figure 4.27

Graph of Mean Normal Curve Equivalents for South Carolina Students
 in Grades 3, 6, and 11 for CIBS/S Skill Areas and Battery Total

Non-Title I Subgroup

coded as being in Title I Reading Programs only, Title I Mathematics Programs only, and Title I Reading and Mathematics Programs. As expected, the performance of 3rd and 6th grade Title I students in Figure 4.28 was considerably below that of the national normative sample for all skill areas tested and Battery Total. With the exception of Reference Skills in Grade 3, achievement patterns for both 3rd and 6th graders were very similar. Reference Skills was the highest performance area for Title I 6th graders, and Social Studies was the highest performance area for Title I 3rd graders. Reading was the lowest performance area for both Title I 3rd and 6th graders.

Tables of the mean scale scores in normal curve equivalents for the Title I Reading Subgroup, the Title I Mathematics Subgroup, and the Title I Reading and Mathematics Subgroups are reported in Appendix C. The Title I Reading Subgroup includes students who were coded as being in Title I Reading Programs only and in Title I Reading and Mathematics Programs. The Title I Mathematics Subgroup includes students who were coded as being in Title I Mathematics Programs only and in Title I Reading and Mathematics Programs. The Title I Reading and Mathematics Subgroup includes students who were coded as being in Title I Reading and Mathematics Programs.

Table 4.14
Mean Scale Scores and Normal Curve Equivalents
for South Carolina Students in Grades 3, 6, and 11
for the CTBS/S Subtests and Tests

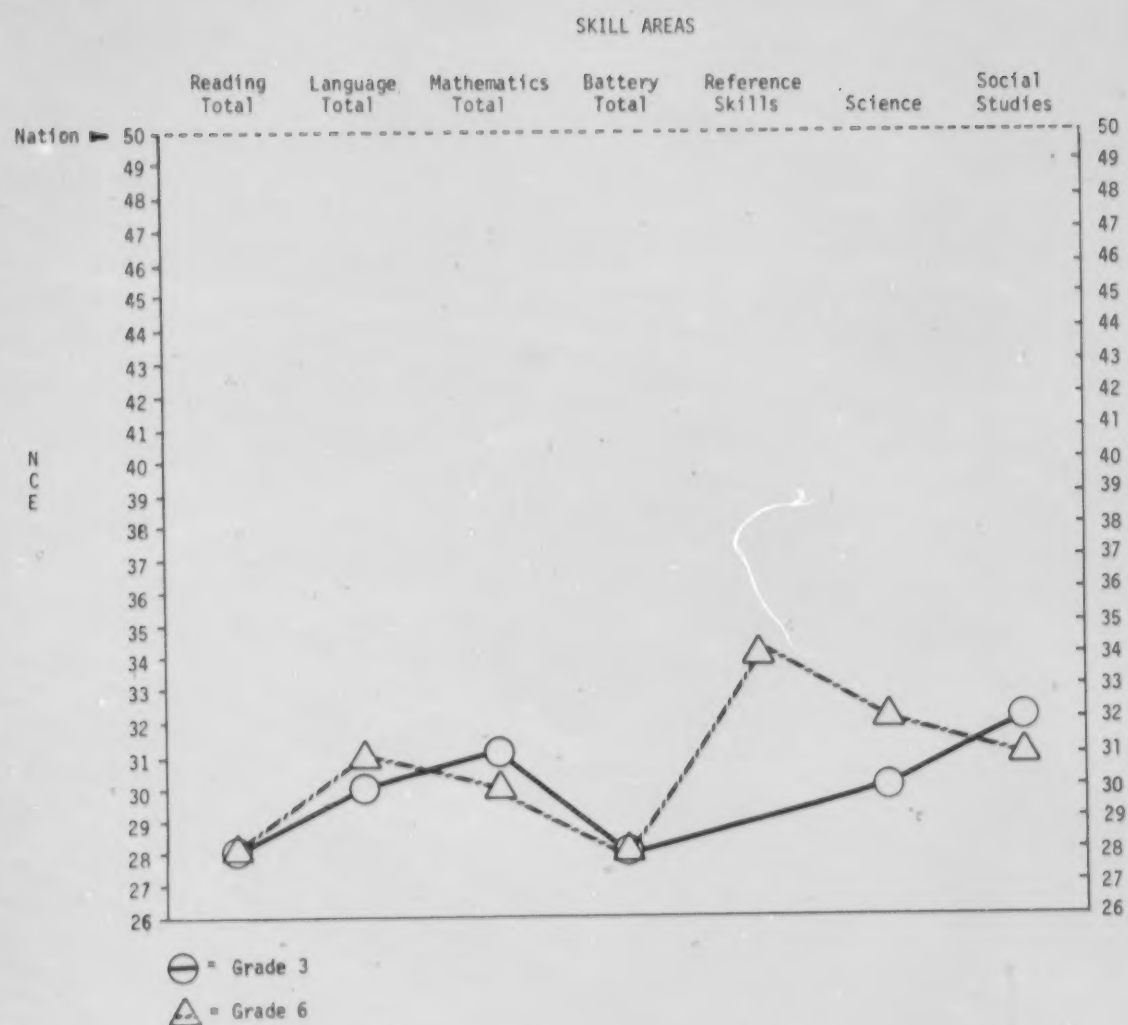
Title I Subgroup

Subtests and Tests	Mean Scale Scores			Normal Curve Equivalents ^a		
	Grade 3	Grade 6	Grade 11 ^b	Grade 3	Grade 6	Grade 11 ^b
Reading Vocabulary	311	384	NA	29	26	NA
Reading Comprehension	NA ^b	413	NA	NA ^b	32	NA
Reading Total	307	389	NA	28	28	NA
Language Mechanics	361	429	NA	33	35	NA
Language Expression	370	434	NA	30	33	NA
Spelling	364	427	NA	32	34	NA
Language Total	339	412	NA	30	31	NA
Mathematics Computation	322	400	NA	33	32	NA
Mathematics Concepts	NA ^b	389	NA	NA ^b	31	NA
Mathematics Applications	NA ^b	392	NA	NA ^b	31	NA
Mathematics Total	314	388	NA	31	30	NA
Battery Total	278	370	NA	28	28	NA
Reference Skills	NA ^b	423	NA	NA ^b	34	NA
Science	323	415	NA	30	32	NA
Social Studies	334	411	NA	32	31	NA
<u>n</u> ^c	10,292	10,925	NA	10,292	10,925	NA

^aThe national mean normal curve equivalent (NCE) is 50 for all CTBS/S subtests and tests. NCE's were converted from mean scale scores but are referred to as mean NCE's.

^bData are not available for these subtests.

^cn = Total number of students completing any CTBS/S subtest or test.



^aData are not available for Reference Skills in Grade 3.

Figure 4.28

Graph of Mean Normal Curve Equivalents for South Carolina Students in Grades 3, 6, and 11 for the CTBS/S Skill Areas and Battery Total

Title I Subgroup

CHAPTER V
CONTENT ANALYSIS OF READING, LANGUAGE, AND MATHEMATICS
FOR GRADES 3, 6, AND 11

Introduction

Chapter V is designed to present an in-depth analysis of the performance of South Carolina 3rd, 6th, and 11th graders in the content and thinking process areas. In the first section of this chapter, logical and empirical content validation results are discussed in assessing the appropriateness of the CTBS/S for South Carolina students. In the second section of this chapter, the Right Response Summary results are presented and discussed by grade level and test level in an attempt to identify specific areas of weakness in the basic skill areas of Reading, Language, and Mathematics.

Content Validation

Before a detailed analysis of any test data is performed, two different types of checks should be performed to ensure that the test data are meaningful for the population of students tested. The two checks that are usually carried out are referred to as a logical content validity check and an empirical content validity check. Both checks attempt to answer the general question, "Is this test (subtest) an accurate or valid indicator of student performance?". Typically, the logical content validity check is conducted prior to the test administration; and the

empirical content validity check is conducted after the test administration.

Logical content validity checks were conducted for the basic skill areas of Reading, Language, and Mathematics in Grades 3 and 6 only. In Grades 3 and 6 for each of these three basic skill areas, the content of the instruction was considered to be consolidated to the extent that a statewide curriculum imbedded within a reasonable number of textbooks could be identified. However, the skill areas of Reference Skills, Science, and Social Studies were considered to be so varied in Grades 3 and 6 that no identification of a common curriculum in these areas was possible. In Grade 11, the areas of Reading, Language, and Mathematics were not systematically a part of the curriculum; and the areas of Reference Skills, Science, and Social Studies were even more varied at the 11th grade level than at lower grade levels. Therefore, a logical content validation was not deemed feasible and was not conducted for the 11th grade. However, empirical content validity checks were conducted in all three grades tested and for all levels of the CTBS/S used.

Logical Content Validation

The purpose of a logical content validity check is to ensure that there is a logical connection between the content of the test and the curricular objectives of a particular state, district, or school. When comparisons are made between a state's student performance and the nation's student performance, a logical content validity check should be conducted for the test utilized with respect to that state's

curricular objectives. Such a check is quite difficult to perform in South Carolina in view of the many different curricula represented by the State's various districts. After recognizing that a precise description of South Carolina's curriculum would necessarily include a great amount of variability, the Office of Research made the decision to conduct the content validity check by using textbooks adopted by the State Board of Education to reflect South Carolina's curriculum.

The logical content validity check was conducted for each of the CTBS/S skill areas of Reading, Language, and Mathematics by levels of the test administered for Grades 3 and 6. Consequently, the checks involved cross-referencing the objectives measured by Levels C and I of the CTBS/S with the State-adopted Grade 3 Reading, Language, and Mathematics textbooks; and cross-referencing the objectives measured by Levels I and II of the CTBS/S with the State-adopted Grade 6 Reading, Language, and Mathematics textbooks.

For each objective measured by the Reading Subtests of Levels C and I for Grade 3 and Levels I and II for Grade 6, content corresponding to these objectives was contained in each of the State-adopted reading textbooks for Grades 3 and 6. Therefore, for the Reading Subtests, Levels C and I for Grade 3 and Levels I and II for Grade 6 were considered to possess an extremely high degree of logical content validity.

In a similar manner, the objectives measured by the Language and Mathematics Subtests of Levels C and I for Grade 3 and Levels I and II for Grade 6 were cross-referenced with the appropriate State-adopted textbooks. In the Language and Mathematics Subtests, there were several

objectives which were not covered in all of the different State-adopted Language and Mathematics textbooks in the 3rd and 6th grades. The agreement between the Language objectives and textbooks in Grades 3 and 6 was higher than the agreement between the Mathematics objectives and textbooks in Grades 3 and 6. Since the CTBS/S is designed to measure only a small sample of national objectives in these areas, an imperfect match is a reasonable expectation. In view of this fact, the extent of the agreement between objectives and textbooks in both areas was sufficient to consider the Language and Mathematics Subtests of Levels C and I for Grade 3 and Levels I and II for Grade 6 to possess content validity.

Although the logical content validation results indicated that the levels of the CTBS/S administered in Grades 3 and 6 were appropriate for use at the State level, a logical content validation should also be conducted at the district level. By cross-referencing local objectives with the objectives measured by the CTBS/S, districts can establish the appropriateness of the CTBS/S for use at the local level. Since local objectives are not necessarily limited to the objectives covered by textbooks, districts should consider not only the textbook objectives but also local objectives not covered in the textbooks in performing the content validation.

Empirical Validation

After the logical content validity check was conducted, the empirical content validity check was conducted for Levels C and I in

the 3rd grade, Levels I and II in the 6th grade, and Level IV in the 11th grade. The empirical content validation is a statistical analysis of the individual student item responses which is performed to ensure that the test is "functioning properly". For a norm-referenced test such as the CTBS/S to be considered as "functioning properly", two factors must be examined. First, the items must have a wide range of difficulty for the students who took the test. The majority of the items should be of medium difficulty, and the remaining items should be either easier or more difficult. Second, the test items must discriminate or differentiate between high scoring students and low scoring students. Thus, more high scoring students than low scoring students should answer each item correctly.

Statistical analyses were performed for a 10% sample of 3rd grade Level C students, 3rd grade Level I students, 6th grade Level I students, 6th grade Level II students, and 11th grade Level IV students for each subtest. The results for each grade and all subtests indicated that the CTBS/S functioned well as a norm-referenced test in South Carolina.

Reliability is a measure of the extent to which test items are all measuring the same characteristic or quality. The reliability coefficients for the subtests of Level C at Grade 3 ranged from .88 to .95; Level I at Grade 3, from .86 to .95; Level I at Grade 6, from .89 to .95; Level II at Grade 6, from .84 to .94; and Level IV at Grade 11, from .86 to .96. In general, the closer the reliability coefficient is to 1.0, the more reliable the subtest or test is considered to be. In view of the fact that all of the CTBS/S reliability coefficients were .84

or larger for all levels and subtests, the conclusion that the CTBS/S is a reliable or consistent measure of South Carolina student achievement can be made.

Right Response Summary Results

In this section, the Right Response Summary results are discussed for South Carolina 3rd and 6th graders by level of the CTBS/S administered and for all South Carolina 11th graders. On the Right Response Summary score report, the percentages of students answering individual items and average percentages of students answering groups of items correctly are given. Within this section, only data for the group of items in the basic skill areas of Reading, Language, and Mathematics are tabulated and discussed. The results are limited to these three basic skill areas because logical and empirical validations were only conducted for these three areas in the 3rd and 6th grades. Although a logical content validation was not conducted in Grade 11 for reasons previously discussed, an empirical content validation was conducted for these three skill areas in Grade 11; therefore, the Right Response Summary data are also discussed at Grade 11 for Reading, Language, and Mathematics. Similar data for the areas of Reference Skills, Science, and Social Studies by grade and test level are presented in Appendix D.

In the past, average percentages correct for item groups obtained from the Right Response Summary were used to answer the question, "In which specific areas within the various subtests and tests are South Carolina's students strongest and weakest relative to the nation?". The

procedure used involved making direct comparisons of the State average item group percentages correct to the national average item group percentages correct for a given grade. In other words, direct comparisons were made between South Carolina data and the national normative data in a given grade. Such a procedure is legitimate to use for all students at the 11th grade level because national normative data is available for Grade 11.7. However, the procedure used in the past is not legitimate to use for all students at the 3rd and 6th grade levels because of functional-level testing. In Grades 3 and 6, a lower level of the CTBS/S than normally recommended by the publisher (functional-level test), in addition to the level of the CTBS/S normally recommended (on-level test), was administered.

The national percentile results presented in Chapter IV illustrated that the combined performance for Level C and Level I 3rd graders and for Level I and Level II 6th graders was below the nation's performance in all skill areas. However, as a result of functional-level testing, the Right Response Summary data for the 3rd and 6th grade levels are not combined for the two test levels used in each grade but are presented separately by each level of test used in Grades 3 and 6. Consequently, comparability between State Right Response Summary data and national Right Response Summary data was lost for both the functional-level tests and the on-level tests in Grades 3 and 6. For the functional-level tests, the only national normative data available for South Carolina Grade 3 Level C students was Grade 2.7 normative data; and the

only national normative data for South Carolina Grade 6 Level I students was Grade 4.7 normative data. Therefore, in the 3rd grade, the low achieving Level C 3rd graders were compared nationally to 2nd graders; and, in the 6th grade, the low achieving Level I 6th graders were compared nationally to 4th graders. For the on-level tests, Grade 3.7 national normative data were available for Level I 3rd graders, and Grade 6.7 national normative data were available for Level II 6th graders. Therefore, the high achieving South Carolina Level I 3rd graders were compared to a national cross-section of students, which includes both low achieving and high achieving 3rd graders; and, similarly, the high achieving South Carolina Level II 6th graders were compared to a national cross-section of students which includes both low achieving and high achieving 6th graders.

Therefore, within each test level, when South Carolina's 3rd and 6th grade students are compared to their respective national normative groups, South Carolina's performance should be relatively high since South Carolina's students at each level of the test are being compared to a lower achieving national normative group. South Carolina's students should appear to have many strengths at each grade level because of the comparative national groups.

Because of the problems which resulted from functional-level testing in Grades 3 and 6, the national normative data can only be used indirectly as a frame of reference to identify specific areas of weakness within a skill area. In these two grades, direct comparisons to the nation cannot be made. However, in Grade 11, since comparable national

normative data are available, direct comparisons to the nation can be made to identify both strengths and weaknesses within a skill area.

Using the nation only as a frame of reference, districts may make interpretations of their local Right Response Summary results which parallel the interpretations of the State results for determining specific weaknesses in Grades 3 and 6 and for determining specific strengths and weaknesses in Grade 11. Districts may also make comparisons of their local data to the State data. For Grades 3 and 6, local comparisons to the State data are presumably more appropriate than local comparisons to the national data since the results for the State population presumably more closely approximate the results for the local population for each level of the test administered in Grades 3 and 6. However, because functional-level testing was implemented on a school basis rather than a district or individual student basis, caution should be exercised in making district and State comparisons since a few schools within a district may have performed atypically high or low on a given level of the test.

Performance of Grade 3 Level C Students

The Right Response Summary data for Grade 3 Level C students are presented in Table 5.1. All data provided for the areas of Reading, Language, and Mathematics on the State CTBS/S Right Response Summary score report are tabled with the exception of individual item data.

In Table 5.1, specific content and thinking process area classifications for the various groups of items are provided under the column labeled "Content and Thinking Process Areas". The category to the extreme left is the subtest or major content area classification (see Table 5.1,

Table 5.1
 Right Response Summary Results for
 the Reading, Language, and Mathematics Subtests
 Grade 3 Level C

Content and Thinking Process Areas	Number of Items	Average Percentages Correct			Difference ^a (State-Nation)
		District 3.7	State 3.7	Nation 2.7	
Reading Vocabulary	33		76	74	(2)
Translation	33		76	74	(2)
Word Definition	33		76	74	(2)
Reading Comprehension/Sentences	23		73	72	(1)
Application	23		73	72	(1)
Semantics/Syntax	23		73	72	(1)
Reading Comprehension/Passages	18		72	70	(2)
Recognition	8		75	74	(1)
Literal Recall	8		75	74	(1)
Translation	4		73	71	(2)
Rewording	2		73	70	(3)
Context clues	2		73	71	(2)
Interpretation	6		67	66	(1)
Main Idea	1		66	67	(-1)
Conclusion	5		67	66	(1)
Language Expression	22		72	73	(-1)
Application	22		72	73	(-1)
Semantics/Syntax	11		72	72	(0)
Verb Form	7		73	74	(-1)
Subject/Verb Agreement	4		69	75	(-6)
Spelling	34		85	81	(4)
Recognition	34		85	81	(4)
Recall of Rule	34		85	81	(4)
Language Mechanics	23		59	53	(6)
Application	23		59	53	(6)
Punctuation	11		54	51	(3)
Capitalization	12		64	54	(10)
Mathematics Computation	28		79	65	(14)
Application	28		79	65	(14)
Addition	10		77	67	(10)
Subtraction	10		74	64	(10)
Multiplication	8		85	63	(22)
Mathematics Concepts/Applications	25		74	70	(4)
Recognition	5		73	67	(6)
Number Systems	2		70	64	(6)
Measurement	3		75	69	(6)
Translation	14		75	71	(4)
Number Systems	10		78	74	(4)
Measurement	4		69	64	(5)
Interpretation	6		72	69	(3)
Problem Solving	6		72	69	(3)

^aThese differences are set off in parentheses to emphasize the point that these differences were not provided on the Right Response Summary results for Grade 3 Level C students because comparable national normative data were not available.

Reading Vocabulary). The second category to the left, the first indentation under the subtest, is the thinking process area classification (see Table 5.1, Translation). The third category to the left, second indentation under the subtest, is the specific content area classification (see Table 5.1, Word Definition). Under the column labeled "Number of Items", the number of items contained in each of the item classifications is given. The column labeled "District 3.7" was left blank so that the corresponding district Right Response Summary data could be supplied for the purpose of making comparisons to the State and to the nation with cautions previously mentioned kept in mind. The numbers under the column labeled "State 3.7" represent the average percentages of South Carolina's students in Grade 3.7 answering each group of items correctly. The numbers under "Nation 2.7" represent the average percentages of the nation's students in Grade 2.7 answering each group of items correctly. The numbers in the column labeled "Difference (State-Nation)" were obtained by subtracting the State average item percentages correct from the national average item percentages correct. These differences are in parentheses because they should not be used to make direct comparisons of student performance to the nation but are only used as a frame of reference for determining the weakest specific areas within the more general skill areas. The previous description of Table 5.1 basically applies to Tables 5.2, 5.3, 5.4, and 5.5 with slight modifications to account for the different grade levels.

The use of Grade 2.7 national data means that no comparable national data are available for schools administering Level C in Grade 3 as a result of functional-level testing. In this particular case, the closest national comparative data for South Carolina 3rd graders is data for the

nation's 2nd graders tested in the spring. In this case, South Carolina's students would be expected to demonstrate performance higher than the students in the nation.

Because of this problem, the national normative data can only be used indirectly as a frame of reference to pinpoint specific weaknesses within the skill areas. Direct comparisons to the nation cannot be made since the results in Chapter IV indicated that the composite performance of South Carolina Level C and Level I 3rd graders was below that of the nation for all skill areas. By selection of the smallest difference for positive numbers, the largest difference for negative numbers, and the largest negative difference for a combination of positive and negative numbers in the difference column of Table 5.1, the specific weaknesses in the basic skill areas of Reading, Language, and Mathematics can be identified for South Carolina Grade 3 Level C students. Note that the difference of -10 is considered to be a larger difference than the differences of -2 and +2.

As indicated in Table 5.1, the numbers in the difference column for the Reading Subtests are equally small. The differences for all item groups are within one or two points of each other which suggests that no one area in Reading was weaker than any other area for 3rd grade Level C students.

Table 5.1 indicates that the weakest area within the Language area occurred in the Language Expression Subtest. Grade 3 Level C students had the most difficulty performing skills involving the Application of Subject/Verb Agreement rules. Although not as weak, 3rd grade Level C students were also weak in Application skills involving the Semantics/Syntax area and the Verb Form area. Language performance was least weak with respect to Application of Capitalization rules within

the Language Mechanics Subtest. Within this same subtest, Punctuation at the Application level was weakest. On the Spelling Subtest, which contains only one content and process area, South Carolina 3rd grade Level C students' performance was between their performance on the other two Language Subtests, Language Expression and Language Mechanics.

In Mathematics, as indicated in Table 5.1, the smallest numbers in the difference column occurred for item groups in the Mathematics Concepts and Applications Subtest. The area of Problem Solving (content area) which requires the student to use Interpretative thinking process skills was the weakest specific area with a difference of 3. Content areas involving Translation thinking process skills were also weak, with a difference of 4 in Number Systems and a difference of 5 in Measurement. However, Recognition skills involving the areas of Number Systems and Measurement were not as weak as Translation skills involving these areas. Both Number Systems and Measurement under Recognition had differences of 6. As indicated by the difference column, the Mathematics Computational skills of Addition, Subtraction, and Multiplication at the Application level were the least weak areas in Mathematics.

Performance of Grade 3 Level I Students

The Right Response Summary data for Grade 3 Level I students are presented in Table 5.2. As a result of functional-level testing, a different type of problem resulted in making comparisons to the nation for South Carolina Grade 3 Level I students. In this case, although comparable national normative data are available, the comparison is somewhat biased. South Carolina's high achieving 3rd graders are being compared with a national cross-section of students which includes both

Table 5.2
Right Response Summary Results for
the Reading, Language, and Mathematics Subtests
Grade 3 Level I

Content and Thinking Process Areas	Number of Items	Average Percentages Correct			Difference (State-Nation)
		District 3.7	State 3.7	Nation 3.7	
Reading Vocabulary	40		56	57	-1
Translation	40		56	57	-1
Recall of Synonyms	40		56	57	-1
Reading Comprehension	45		58	57	1
Recognition/Application	12		65	63	2
Literal Recall	12		65	63	2
Translation	10		58	57	1
Rewording/Context Clues	10		58	57	1
Interpretation	23		54	53	1
Main Idea	8		52	50	2
Descriptive Words	4		63	62	1
Conclusion	11		52	52	0
Spelling	44		72	73	-1
Recognition/Application	37		74	75	-1
Recall of Rule	37		74	75	-1
Translation	7		62	64	-2
Context Clues	7		62	64	-2
Language Mechanics	20		60	60	0
Recognition/Application	20		60	60	0
Punctuation	10		60	60	0
Capitalization	10		59	60	-1
Language Expression	30		62	61	1
Recognition/Application	10		55	57	-2
Usage	10		55	57	-2
Translation	4		72	70	2
Diction	4		72	70	2
Interpretation	8		70	69	1
Syntactical Relationships	8		70	69	1
Analysis	8		56	55	1
Organization	8		56	55	1
Mathematics Computation	48		67	67	0
Application	48		67	67	0
Addition	12		73	73	0
Subtraction	12		67	67	0
Multiplication	12		64	65	-1
Division	12		64	64	0
Mathematics Concepts	25		65	67	-2
Recognition	8		67	69	-2
Number Systems/Properties	3		52	56	-4
Geometric Relationships	5		76	76	0
Translation	5		83	83	0
Number Systems/Properties	5		83	83	0
Interpretation	12		55	59	-4
Number Systems/Properties	4		47	54	-7
Sets	3		73	75	-2
Measurement	4		52	55	-3
Problem Solving	1		51	53	-2
Mathematics Applications	25		56	58	-2
Interpretation	20		56	58	-2
Sets	4		65	68	-3
Geometric Relationships	1		59	61	-2
Measurement	5		51	53	-2
Mathematical Sentences	4		55	60	-5
Problem Solving	4		49	52	-3
Reasoning	2		61	62	-1
Analysis	5		57	59	-2
Problem Solving	5		57	59	-2

high and low achieving students. Again, South Carolina's results are expected to be similar to the nation's.

The Reading Subtest results in Table 5.2 indicate that the weakest area occurred at the Translation level of Recall of Synonyms for the Reading Vocabulary Subtest. For each of the three thinking process areas within the Reading Comprehension Subtest, South Carolina's student performance was approximately equal. The figures in the difference column are 2, 1, and 1 for the thinking process areas of Recognition/Application, Translation, and Interpretation, respectively.

For the Language Subtests, the weakest thinking process areas were Translation within the Spelling Subtest and Recognition/Application within the Language Expression Subtest (refer to Table 5.2). The thinking process areas for these two subtests contain only one content area, Context Clues and Usage, respectively. Other weak areas are evident in the Recognition/Application process areas of Spelling (Recall of Rule), Language Mechanics (Capitalization), and Language Expression (Usage). Although Recognition/Application, Punctuation, within the Language Mechanics Subtest has a difference of 0, caution must be exercised since the group of students taking Level I at the 3rd grade is not representative of all of South Carolina 3rd grade students.

In Mathematics, the weakest area occurred within the Mathematics Concepts Subtest for Interpretation, Number Systems/Properties (refer to Table 5.2). The next weakest area with a difference of -5 was in the Mathematics Applications Subtest for Interpretation of Mathematical Sentences. Within the Mathematics Computation Subtest, Multiplication at the Application level was slightly lower than the other areas within this subtest. This difference of -1 for Multiplication is so close to

the other difference figures of 0 for Addition, Subtraction, and Division that each of these four areas might be considered equally weak.

Performance of Grade 6 Level I Students

In Table 5.3, the Right Response Summary data for Grade 6 Level I students are presented. The use of Grade 4.7 national data in Table 5.3 means that no comparable national normative data are available for schools administering Level I in Grade 6. In this particular case, the closest national comparative data for South Carolina's 6th graders is data for the nation's 4th graders. Therefore, in most instances, South Carolina's 6th grade Level I students would be expected to demonstrate performance higher than the 4th grade students in the nation.

South Carolina's Grade 6 students who took Level I of CTBS/S displayed a weakness in the Reading Vocabulary Subtest for items classified in Translation, Recall of Synonyms (see Table 5.3). For the Reading Comprehension Subtest, items which measure Descriptive Words within Interpretation were more frequently missed by South Carolina students. Other content and thinking process areas within the Reading Comprehension Subtest were approximately of equal weakness for South Carolina students.

In Language, all of the process and content areas contained in the Spelling Subtest were equal in weakness for 6th grade students who took Level I (see Table 5.3). For the Language Mechanics Subtest, Capitalization at the Recognition/Application level was the weakest area of student performance. Within the Language Expression Subtest, Usage at the Recognition/Application level was the specific area for which South Carolina students had the poorest performance.

Table 5.3
 Right Response Summary Results for
 the Reading, Language, and Mathematics Subtests
 Grade 6 Level I

Content and Thinking Process Areas	Number of Items	Average Percentages Correct			Difference ^a (State-Nation)
		District 6.7	State 6.7	Nation 4.7	
Reading Vocabulary	40		66	68	(-2)
Translation	40		66	68	(-2)
Recall of Synonyms	40		66	68	(-2)
Reading Comprehension	45		70	69	(1)
Recognition/Application	12		77	75	(2)
Literal Recall	12		77	75	(2)
Translation	10		71	69	(2)
Rewording/Context Clues	10		71	69	(2)
Interpretation	23		66	65	(1)
Main Idea	8		65	64	(1)
Descriptive Words	4		73	74	(-1)
Conclusions	11		65	63	(2)
Spelling	44		81	79	(2)
Recognition/Application	37		82	80	(2)
Recall of Rule	37		82	80	(2)
Translation	7		72	70	(2)
Context Clues	7		72	70	(2)
Language Mechanics	20		70	69	(1)
Recognition/Application	20		70	69	(1)
Punctuation	10		69	67	(2)
Capitalization	10		72	72	(0)
Language Expression	30		69	70	(-1)
Recognition/Application	10		60	66	(-6)
Usage	10		60	66	(-6)
Translation	4		80	79	(1)
Diction	4		80	79	(1)
Interpretation	8		76	76	(0)
Syntactical Relationships	8		76	76	(0)
Analysis	8		69	65	(4)
Organization	8		69	65	(4)
Mathematics Computation	48		86	80	(6)
Application	48		86	80	(6)
Addition	12		90	85	(5)
Subtraction	12		83	78	(5)
Multiplication	12		86	81	(5)
Division	12		86	77	(9)
Mathematics Concepts	25		76	76	(0)
Recognition	8		73	75	(-2)
Number Systems/Properties	3		61	64	(-3)
Geometric Relationships	5		81	82	(-1)
Translation	5		91	89	(2)
Number Systems/Properties	5		91	89	(2)
Interpretation	12		71	71	(0)
Number Systems/Properties	4		67	69	(-2)
Sets	3		83	83	(0)
Measurement	4		67	66	(1)
Problem Solving	1		72	67	(5)
Mathematics Applications	25		72	70	(2)
Interpretation	20		71	70	(1)
Sets	4		75	77	(-2)
Geometric Relationships	1		74	72	(2)
Measurement	5		66	65	(1)
Mathematical Sentences	4		72	71	(1)
Problem Solving	4		71	67	(4)
Reasoning	2		72	71	(1)
Analysis	5		75	71	(4)
Problem Solving	5		75	71	(4)

^aThese differences are set off in parentheses to emphasize the point that these differences were not provided on the Right Response Summary results for Grade 6 Level I students because comparable national normative data were not available.

The content areas of Addition, Subtraction, and Multiplication at the Application level within the Mathematics Computation Subtest were areas of equal weakness for 6th Grade South Carolina students who took Level I (see Table 5.3). The weakest student performance on a group of items within the Mathematics Concepts Subtest occurred within the Number Systems/Properties content area at both the Recognition and Interpretation levels. For the Mathematics Applications Subtest, the content area of Sets at the Interpretation level was the weakest.

Performance of Grade 6 Level II Students

In Table 5.4, the Right Response Summary data for Grade 6 Level II students are presented. As a result of functional-level testing, a different type of problem resulted in making comparisons to the nation for this group of South Carolina students. In this case, although comparable national normative data are available, the comparison is somewhat biased. South Carolina's high achieving 6th graders are being compared with a national cross-section of students which includes both high and low achieving students. Again, South Carolina's results are expected to be similar to the nation's.

In Reading, South Carolina's 6th grade students who took Level II displayed their weakest performance for the item group measuring the area of Structure/Style at the Analysis level within the Reading Comprehension Subtest (see Table 5.4). A similar weakness within this subtest was at the Interpretation level for the content area of Descriptive Words.

The differences for the item groups within the Spelling Subtest indicated that the item groups were approximately equal in weakness (see

Table 5.4
Right Response Summary Results for
the Reading, Language, and Mathematics Subtests
Grade 6 Level II

Content and Thinking Process Areas	Number of Items	Average Percentages Correct			Difference (State-Nation)
		District 6.7	State 6.7	Nation 6.7	
Reading Vocabulary	40		64	70	-6
Translation	40		64	70	-6
Recall of Synonyms	40		64	70	-6
Reading Comprehension	45		64	66	-2
Recognition/Application	8		75	76	-1
Literal Recall	8		75	76	-1
Translation	11		68	70	-2
Rewording	6		65	68	-3
Context Clues	5		72	72	0
Interpretation	17		59	61	-2
Main Idea	5		60	62	-2
Descriptive Words	4		56	60	-4
Conclusion	8		59	61	-2
Analysis	9		59	63	-4
Structure/Style	9		59	63	-4
Spelling	50		77	79	-2
Recognition/Application	42		79	81	-2
Recall of Rule	42		79	81	-2
Translation	8		64	67	-3
Context Clues	8		64	67	-3
Language Mechanics	20		68	69	-1
Recognition/Application	20		68	69	-1
Punctuation	10		67	68	-1
Capitalization	10		69	70	-1
Language Expression	35		63	65	-2
Recognition/Application	10		70	73	-3
Usage	10		70	73	-3
Translation	14		63	67	-4
Diction	14		63	67	-4
Interpretation	5		54	55	-1
Syntactical Relationships	5		54	55	-1
Analysis	6		58	57	1
Organization	6		58	57	1
Mathematics Computation	48		70	73	-3
Application	48		70	73	-3
Addition	12		78	80	-2
Subtraction	12		76	77	-1
Multiplication	12		69	71	-2
Division	12		57	61	-4
Mathematics Concepts	25		62	66	-4
Recognition	4		64	65	-1
Geometric Relationships	4		64	65	-1
Translation	3		71	70	1
Graphs	3		71	70	1
Interpretation	15		61	66	-5
Number Systems/Properties	5		60	67	-7
Sets	2		74	75	-1
Measurement	3		52	58	-6
Mathematical Sentences	1		59	62	-3
Problem Solving	4		62	70	-8
Analysis	3		58	61	-3
Measurement	1		53	60	-7
Problem Solving	2		60	62	-2
Mathematics Applications	25		62	67	-5
Interpretation	21		63	68	-5
Number Systems/Properties	1		70	74	-4
Sets	1		52	54	-2
Measurement	4		65	69	-4
Mathematical Sentences	5		60	67	-7
Problem Solving	8		61	67	-6
Reasoning	2		72	74	-2
Analysis	4		60	63	-3
Problem Solving	2		50	59	-9
Reasoning	2		66	65	1

Table 5.4). This situation also existed for the item groups contained within the Language Mechanics Subtest. For the Language Expression Subtest, Usage (Recognition/Application) and Diction (Translation) were approximately equal in weakness.

Within the single process area of Application for the Mathematics Computation Subtest, the content area of Division was weaker than the areas of Addition, Subtraction, or Multiplication (see Table 5.4). For the Mathematics Concepts Subtest, the Interpretation process had three approximately equal weaknesses: Problem Solving, Number Systems/Properties, and Measurement. Within this same subtest, Measurement at the Analysis level was equally as weak. Finally, within the Mathematics Applications Subtest, the weakest area occurred at the Analysis level for items dealing with Problem Solving. Mathematical Sentences and Problem Solving at the Interpretation level were also second weak areas within the Mathematics Applications Subtest.

Performance of Grade 11 Level IV Students

The Right Response Summary data for South Carolina's Grade 11 Level IV students are presented in Table 5.5. At the 11th grade level, no problem existed in making comparisons of South Carolina's students to the nation's students. Therefore, the Right Response Summary data can be used to identify areas of strengths and weaknesses relative to the nation. Positive differences correspond to those areas in which the performance of South Carolina's 11th graders was above that of the nation's 11th graders and are considered strengths relative to the nation. Negative differences correspond to those areas in which the performance

Table 5.5
Right Response Summary Results for
the Reading, Language, and Mathematics Subtests
Grade 11 Level IV

Content and Thinking Process Areas	Number of Item	Average Percentages Correct			Difference (State-Nation)
		District 11.7	State 11.7	Nation 11.7	
Reading Vocabulary	40		56	65	-9
Translation	40		56	65	-9
Recall of Synonyms	40		56	65	-9
Reading Comprehension	45		57	64	-7
Recognition/Application	3		41	45	-4
Literal Recall	3		41	45	-4
Translation	10		60	67	-7
Rewording	6		59	65	-6
Context Clues	4		62	71	-9
Interpretation	23		59	66	-7
Main Idea	9		55	65	-10
Descriptive Words	3		64	68	-4
Conclusions	11		61	66	-5
Analysis	9		54	63	-9
Structure/Style	9		54	63	-9
Spelling	30		64	69	-5
Recognition/Application	26		66	72	-6
Recall of Rule	26		66	72	-6
Translation	4		50	53	-3
Context Clues	4		50	53	-3
Language Mechanics	20		68	72	-4
Recognition/Application	20		68	72	-4
Punctuation	10		69	73	-4
Capitalization	10		67	71	-4
Language Expression	35		59	64	-5
Recognition/Application	10		67	72	-5
Usage	10		67	72	-5
Translation	10		42	50	-8
Diction	10		42	50	-8
Interpretation	5		62	59	3
Syntactical Relationships	5		62	59	3
Analysis	10		65	72	-7
Organization	10		65	72	-7
Mathematics Computation	48		59	67	-8
Application	48		59	67	-8
Addition	12		62	72	-10
Subtraction	12		56	64	-8
Multiplication	12		63	71	-8
Division	12		55	63	-8
Mathematics Concepts	25		59	67	-8
Recognition	5		54	63	-9
Number Systems/Properties	5		54	63	-9
Interpretation	12		61	69	-8
Number Systems/Properties	4		56	60	-4
Sets	3		67	69	-2
Geometric Relationships	3		56	72	-16
Measurement	1		81	89	-8
Problem Solving and Reasoning	1		62	76	-14
Analysis	8		58	66	-8
Geometric Relationships	1		67	74	-7
Mathematical Sentences	3		49	53	-4
Problem Solving and Reasoning	4		62	74	-12
Mathematical Applications	25		49	60	-11
Translation	2		52	66	-14
Measurement	2		52	66	-14
Interpretation	18		49	58	-9
Geometric Relationships	1		37	43	-6
Measurement	3		50	64	-14
Mathematical Sentences	6		51	57	-6
Problem Solving and Reasoning	8		48	59	-11
Analysis	5		47	62	-15
Problem Solving and Reasoning	5		47	62	-15

of South Carolina's 11th graders was below that of the nation's 11th graders and are considered weaknesses relative to the nation.

Table 5.5 indicates that South Carolina's 11th graders were weak relative to the nation in all of the Reading Subtest areas as indicated by the negative differences which occurred in all areas. In Reading Vocabulary, 11th grade students were weak relative to the nation in Recall of Synonyms at the Translation level which has a difference of -9. In Reading Comprehension, South Carolina 11th grade students' performance was weakest in Main Idea at the Interpretation level, Context Clues at the Translation level, and Structure/Style at the Analysis level with differences of -10, -9, and -9, respectively. Other weak areas in the Reading Comprehension Subtest occurred for Rewording at the Translation level, Conclusions at the Interpretation level, Literal Recall at the Recognition/Application level, and Descriptive Words at the Interpretation level with differences of -6, -5, -4, and -4, respectively.

In general, South Carolina's 11th graders were weak relative to the nation in the Language areas. For the Spelling Subtest, the weakest area of student performance was on items measuring Recall of Rule at the Recognition/Application level. The equal differences of -4 which occurred in the Language Mechanics areas may be interpreted to mean that 11th graders were equally weak in Punctuation and Capitalization at the Recognition/Application level. For the Language Expression Subtest, Diction at the Translation level and Organization at the Analysis level were the weakest areas. South Carolina's 11th graders were strong relative to the nation in Syntactical Relationships at the

Interpretation level within the Language Expression Subtest as indicated by the positive difference of 3.

Table 5.5 indicates that South Carolina's 11th graders were generally weak relative to the nation in the Mathematics Subtests as indicated by the negative differences which occurred in all areas. Within the Mathematics Computation Subtest, Addition at the Application level had a slightly larger negative difference than Subtraction, Multiplication, and Division; nevertheless, all four of the Computation areas were of about the same weakness. Within the Mathematics Concepts Subtest, the greatest weakness was found for the group of items measuring Geometric Relationships at the Interpretation level with a difference of -16. The next weakest area was the area Problem Solving and Reasoning at the Interpretation level, with a difference of -14. Note, however, that this area only contained one item. Another weak area was Problem Solving and Reasoning at the Analysis level, with a difference of -12. Finally, within the Mathematics Applications Subtest, Problem Solving and Reasoning at the Analysis level with a difference of -15, Measurement at the Translation level with a difference of -14, and Measurement at the Interpretation level with a difference of -14 were the weakest areas.

APPENDIX A

Median Grade Equivalents and Median National Percentiles
for South Carolina Students in Grades 3, 6, and 11
for the CTBS/S Subtests and Tests
All Students

Median Grade Equivalents and Median National Percentiles
for South Carolina Students in Grades 3, 6, and 11
for the CTBS/S Subtests and Tests

All Students

Subtests and Tests	Median Grade Equivalents			Median National Percentiles		
	Grade 3	Grade 6	Grade 11	Grade 3	Grade 6	Grade 11
National Median	3.7	6.7	11.7	50.0	50.0	50.0
Reading Vocabulary	3.4	5.6	10.3	39.6	36.0	33.2
Reading Comprehension	NA ^a	6.0	10.5	NA ^a	44.9	36.9
Reading Total	3.4	5.8	10.5	41.0	40.0	35.0
Language Mechanics	3.5	5.7	10.7	46.9	43.9	41.0
Language Expression	3.4	5.9	10.5	41.7	43.6	39.9
Spelling	3.4	5.8	10.7	42.3	43.0	40.1
Language Total	3.4	5.8	10.6	43.1	42.5	38.8
Mathematics Computation	3.5	5.9	9.8	40.1	38.9	36.4
Mathematics Concepts	NA ^a	5.6	10.3	NA ^a	37.3	36.7
Mathematics Application	NA ^a	5.8	9.6	NA ^a	38.8	31.2
Mathematics Total	3.4	5.7	9.9	39.9	36.9	34.1
Battery Total	3.4	5.7	10.3	42.2	37.3	32.9
Reference Skills	NA ^a	6.6	10.8	NA ^a	48.7	41.3
Science	3.3	6.3	10.4	41.0	45.6	39.1
Social Studies	3.4	5.7	11.1	43.1	41.8	43.8
<u>n</u> ^b	41,660	47,971	37,271	41,660	47,971	37,271

^aData on these subtests are not available.

^bn = Total number of students completing any CTBS/S subtest or test.

APPENDIX B

South Carolina Actual and Adjusted
Battery Total Percent Distributions
for Students in Grades 3, 6, and 11

South Carolina Actual and Adjusted
Battery Total Percent Distributions

Grade 3

Scale Score Interval	Nation	South Carolina	
		Actual ^a	Adjusted ^b
508-607 ^a	3.4	0.0	0.0
552-579 ^a		0.2	0.3
524-551 ^a		0.7	0.8
496-523 ^a		1.4	1.8
468-495	3.5	2.0	2.6
440-467	6.2	3.4	4.2
412-439	9.5	5.8	6.9
384-411	12.5	10.2	11.7
356-383	15.0	15.9	17.5
328-355	14.5	17.2	17.6
300-327	12.8	11.9	11.0
272-299	9.9	11.9	10.1
244-271	6.4	9.2	7.5
216-243	3.7	5.7	4.7
188-215 ^a	2.6	3.0	2.3
160-187 ^a		1.1	0.8
132-159 ^a		0.4	0.2
104-131 ^a		0.0	0.0
Total	100.0	100.0	100.0

^aData were not available for these individual scale score intervals. Therefore, the bracketed percentages of 3.4 and 2.6 represent the sum of the percentages for the four highest scale score intervals and the sum of the percentages for the four lowest scale score intervals, respectively. These values were obtained by interpolation using scale score to percentile rank tables which ranged from 1 to 99; therefore, obtaining percentages in the extreme scale score intervals was not possible.

^bWeights were 78.6% and 21.4% for white and nonwhite subgroups, respectively. The corresponding South Carolina racial percentages were 61.2% and 38.8%.

South Carolina Actual and Adjusted
Battery Total Percent Distributions

Grade 6

Scale Score Interval	Nation	South Carolina	
		Actual	Adjusted ^b
720-747 ^a	2.0	0.1	0.1
692-719 ^a		0.2	0.3
664-691 ^a		0.6	0.9
636-663	1.6	1.0	1.3
608-635	2.9	1.3	1.8
580-607	4.7	2.6	3.3
552-579	7.0	4.8	6.1
524-551	9.3	6.5	7.9
496-523	11.0	9.3	11.0
468-495	12.0	10.7	12.1
440-467	11.8	11.4	12.0
412-439	10.7	12.6	12.2
384-411	9.0	11.4	10.1
356-383	6.8	10.3	8.2
328-355	4.8	7.5	5.7
300-327	3.2	4.6	3.5
272-299	1.9	2.8	2.0
244-271 ^a	1.3	1.5	1.0
216-243 ^a		0.6	0.4
188-215 ^a		0.2	0.1
Total	100.0	100.0	100.0

^aData were not available for these individual scale score intervals. Therefore, the bracketed percentages of 2.0 and 1.3 represent the sum of the percentages for the three highest scale score intervals and the sum of the percentages for the three lowest scale score intervals, respectively. These values were obtained by interpolation using scale score to percentile rank tables which ranged from 1 to 99; therefore, obtaining percentages in the extreme scale score intervals was not possible.

^bWeights were 78.0% and 22.0% for the white and nonwhite subgroups, respectively. The corresponding South Carolina racial percentages were 57.9% and 42.1%.

South Carolina Actual and Adjusted
Battery Total Percent Distributions

Grade 11

Scale Score Interval	Nation	South Carolina	
		Actual	Adjusted ^a
944-971 ^a	2.1	0.1	0.2
916-943 ^a		0.3	0.4
888-915 ^a		0.7	1.0
860-887	1.6	1.0	1.3
832-859	2.5	1.8	2.3
804-831	3.6	2.0	2.6
776-803	4.9	3.2	4.3
748-775	5.9	3.6	4.6
720-747	7.3	4.7	6.0
692-719	8.3	5.8	7.3
664-691	8.7	6.4	7.7
636-663	9.0	7.4	8.9
608-635	8.8	8.1	9.1
580-607	8.0	8.2	8.6
552-579	7.3	8.2	7.9
524-551	6.0	7.5	6.6
496-523	5.0	6.5	5.4
468-495	3.9	5.9	4.4
440-467	2.8	5.2	3.6
412-439	2.0	4.4	2.7
384-411 ^a	2.3	3.6	2.1
356-383 ^a		2.6	1.4
328-355 ^a		1.8	1.0
300-327 ^a		0.7	0.4
272-299 ^a		0.2	0.1
244-271 ^a		0.1	0.1
Total	100.0	100.0	100.0

^aData were not available for these individual scale score intervals. Therefore, the bracketed percentages of 2.1 and 2.3 represent the sum of the percentages for the three highest scale score intervals and the sum of the percentages for the six lowest scale score intervals, respectively. These values were obtained by interpolation using scale score to percentile rank tables which ranged from 1 to 99; therefore, obtaining percentages in the extreme scale score intervals was not possible.

^bWeights were 80.55 and 19.55 for the white and nonwhite subgroups, respectively. The corresponding South Carolina racial percentages were 59.7% and 40.3%.

APPENDIX C

Mean Scale Scores and Normal Curve Equivalents
for South Carolina Title I Subgroups of Students in Grades 3, 6, and 11
for the CTBS/S Subtests and Tests

Mean Scale Scores and Normal Curve Equivalents
for South Carolina Students in Grades 3, 6, and 11
for the CTBS/S Subtests and Tests

Title I Reading Subgroup

Subtests and Tests	Mean Scale Scores			Normal Curve Equivalents ^a		
	Grade 3	Grade 6	Grade 11 ^b	Grade 3	Grade 6	Grade 11 ^b
Reading Vocabulary	306	377	NA	28	24	NA
Reading Comprehension	NA ^b	406	NA	NA ^b	31	NA
Reading Total	302	382	NA	27	27	NA
Language Mechanics	357	426	NA	32	34	NA
Language Expression	365	429	NA	29	31	NA
Spelling	360	422	NA	31	33	NA
Language Total	335	407	NA	29	30	NA
Mathematics Computation	320	400	NA	32	32	NA
Mathematics Concepts	NA ^b	385	NA	NA ^b	30	NA
Mathematics Applications	NA ^b	389	NA	NA ^b	29	NA
Mathematics Total	312	386	NA	30	29	NA
Battery Total	274	365	NA	27	27	NA
Reference Skills	NA ^b	416	NA	NA ^b	32	NA
Science	320	410	NA	29	31	NA
Social Studies	331	406	NA	32	30	NA
^c n	8,936	8,078	NA	8,936	8,078	NA

^aThe national mean normal curve equivalent (NCE) is 50 for all CTBS/S subtests and tests. NCE's were converted from mean scale scores but are referred to as mean NCE's.

^bData are not available for these subtests.

^cn = Total number of students completing any CTBS/S subtest or test.

Mean Scale Scores and Normal Curve Equivalents
for South Carolina Students in Grades 3, 6, and 11
for the CTBS/S Subtests and Tests

Title I Mathematics Subgroup

Subtests and Tests	Mean Scale Scores			Normal Curve Equivalents ^a		
	Grade 3	Grade 6	Grade 11 ^b	Grade 3	Grade 6	Grade 11 ^b
Reading Vocabulary	319	383	NA	29	26	NA
Reading Comprehension	NA ^b	410	NA	NA ^b	32	NA
Reading Total	306	388	NA	28	28	NA
Language Mechanics	359	425	NA	33	34	NA
Language Expression	369	433	NA	30	32	NA
Spelling	364	425	NA	32	34	NA
Language Total	338	410	NA	30	31	NA
Mathematics Computation	319	396	NA	31	31	NA
Mathematics Concepts	NA ^b	385	NA	NA ^b	30	NA
Mathematics Applications	NA ^b	388	NA	NA ^b	30	NA
Mathematics Total	311	384	NA	30	29	NA
Battery Total	276	368	NA	28	27	NA
Reference Skills	NA ^b	419	NA	NA ^b	33	NA
Science	319	411	NA	29	32	NA
Social Studies	332	409	NA	32	31	NA
<u>n</u> ^c	6,028	7,680	NA	6,028	7,680	NA

^aThe national mean normal curve equivalent (NCE) is 50 for all CTBS/S subtests and tests. NCE's were converted from mean scale scores, but are referred to as mean NCE's.

^bData are not available for these subtests.

^cn = Total number of students completing any CTBS/S subtest or test.

Mean Scale Scores and Normal Curve Equivalents
for South Carolina Students in Grades 3, 6, and 11
for the CTBS/S Subtests and Tests

Title I Reading and Mathematics Subgroup

Subtests and Tests	Mean Scale Scores			Normal Curve Equivalents ^a		
	Grade 3	Grade 6	Grade 11 ^b	Grade 3	Grade 6	Grade 11 ^b
Reading Vocabulary	301	371	NA	26	23	NA
Reading Comprehension	NA ^b	398	NA	NA ^b	23	NA
Reading Total	297	375	NA	25	25	NA
Language Mechanics	352	418	NA	31	32	NA
Language Expression	360	423	NA	28	30	NA
Spelling	356	416	NA	30	32	NA
Language Total	329	400	NA	27	28	NA
Mathematics Computation	315	394	NA	30	31	NA
Mathematics Concepts	NA ^b	380	NA	NA ^b	28	NA
Mathematics Applications	NA ^b	381	NA	NA ^b	28	NA
Mathematics Total	306	379	NA	28	28	NA
Battery Total	267	358	NA	25	25	NA
Reference Skills	NA ^b	407	NA	NA ^b	31	NA
Science	312	402	NA	27	29	NA
Social Studies	326	400	NA	30	29	NA
^c n	4,672	4,833	NA	4,672	4,833	NA

^aThe national mean normal curve equivalent (NCE) is 50 for all CTBS/S subtests and tests. NCE's were converted from mean scale scores but are referred to as mean NCE's.

^bData are not available for these subtests.

^cn = Total number of students completing any CTBS/S subtest or test.

APPENDIX D

Right Response Summary Results for
Reference Skills, Science, and Social Studies
for Grades 3, 6, and 11 by Test Level

Right Response Summary Results for
Reference Skills, Science, and Social Studies

Grade 3 Level C

Content and Thinking Process Areas	Number of Items	Average Percentages Correct			Difference ^a (State-Nation)
		District 3.7	State 3.7	Nation 2.7	
Science	30		58	59	(-1)
Recognition	8		58	57	(1)
Chemistry	2		60	63	(-3)
Physics	3		49	50	(-1)
Earth Science	1		52	50	(2)
Ecology	1		62	50	(12)
Zoology	1		81	80	(1)
Classification	7		64	63	(1)
Physics	1		37	33	(4)
Earth Science	1		57	58	(-1)
Botany	2		65	65	(0)
General	3		75	73	(2)
Quantification	5		52	54	(-2)
Ecology	1		57	59	(-2)
Zoology	2		50	48	(2)
General	2		51	58	(-7)
Interpretation	9		56	58	(-2)
Chemistry	1		83	87	(-4)
Physics	7		50	53	(-3)
Zoology	1		71	68	(3)
Prediction	1		73	72	(1)
General	1		73	72	(1)
Social Studies	30		60	57	(3)
Recognition	12		66	62	(4)
Physical Environment	5		60	55	(5)
Social Environment	1		80	79	(1)
Political/Economic Environment	2		67	58	(9)
History	4		68	68	(0)
Translation	10		56	52	(4)
Physical Environment	9		54	51	(3)
History	1		70	65	(5)
Interpretation	5		49	52	(-3)
Physical Environment	2		45	48	(-3)
Political/Economic Environment	2		58	60	(-2)
History	1		38	42	(-4)
Application	2		71	69	(2)
Social Environment	1		60	57	(3)
Political/Economic Environment	1		82	80	(2)
Analysis	1		66	66	(0)
Physical Environment	1		66	66	(0)

These differences are set off in parentheses to emphasize the point that these differences were not provided on the Right Response Summary results for Grade 3 Level C students because comparable national normative data were not available.

Right Response Summary Results for
Reference Skills, Science, and Social Studies

Grade 3 Level I

Content and Thinking Process Areas	Number of Items	Average Percentages Correct			Difference (State-Nation)
		District 3.7	State 3.7	Nation 3.7	
Reference Skills	20		56	54	2
Recognition	10		55	54	1
Parts of a Book	3		40	38	2
Dictionary Skills	7		62	61	1
Application	10		57	54	3
Parts of a Book	2		53	52	1
Library Use	8		58	54	4
Science	37		50	50	0
Recognition	6		37	39	-2
Earth Science	3		31	35	-4
Zoology	3		43	43	0
Classification	7		55	54	1
Chemistry	2		46	45	1
Physics	1		69	67	2
Botany	1		47	43	4
Zoology	3		60	58	2
Quantification	5		59	58	1
Physics	1		49	46	3
Zoology	4		62	61	1
Interpretation	9		49	49	0
Chemistry	1		37	38	-1
Physics	6		53	52	1
Earth Science	1		51	53	-2
General	1		39	39	0
Prediction from Data	6		49	50	-1
Physics	6		49	50	-1
Hypothesis Evaluation	3		60	58	2
Physics	1		34	33	1
Ecology	1		61	58	3
Zoology	1		85	84	1
Design Analysis	1		43	41	2
Physics	1		43	41	2
Social Studies	37		46	45	1
Recognition	10		50	50	0
Physical Environment	1		46	47	-1
Social Environment	1		56	54	2
Political/Economic Environment	5		49	49	0
History	3		51	50	1
Translation	4		40	39	1
Physical Environment	4		40	39	1
Interpretation	13		48	46	2
Physical Environment	3		38	37	1
Social Environment	5		54	52	2
Political/Economic Environment	2		48	46	2
History	3		49	46	3
Application	4		38	38	0
Physical Environment	1		29	28	1
Social Environment	2		37	37	0
Political/Economic Environment	1		49	50	-1
Analysis	6		45	43	2
Physical Environment	4		51	49	2
Social Environment	1		40	39	1
History	1		26	25	1

Right Response Summary Results for
Reference Skills, Science, and Social Studies

Grade 6 Level I

Content and Thinking Process Areas	Number of Items	Average Percentages Correct			Difference ^a (State-Nation)
		District 6.7	State 6.7	Nation 4.7	
Reference Skills	20		69	64	(5)
Recognition	10		69	66	(3)
Parts of a Book	3		51	49	(2)
Dictionary Skills	7		77	73	(4)
Application	10		70	63	(7)
Parts of a Book	2		66	61	(5)
Library Use	8		71	63	(8)
Science	37		61	59	(2)
Recognition	6		50	50	(0)
Earth Science	3		44	48	(-4)
Zoology	3		55	53	(2)
Classification	7		66	61	(5)
Chemistry	2		62	57	(5)
Physics	1		77	73	(4)
Botany	1		58	53	(5)
Zoology	3		66	63	(3)
Quantification	5		69	66	(3)
Physics	1		57	49	(8)
Zoology	4		73	71	(2)
Interpretation	9		61	58	(3)
Chemistry	1		54	47	(7)
Physics	6		64	62	(2)
Earth Science	1		63	61	(2)
General	1		49	48	(1)
Prediction from Data	6		57	56	(1)
Physics	6		57	56	(1)
Hypothesis Evaluation	3		68	65	(3)
Physics	1		39	38	(1)
Ecology	1		72	68	(4)
Zoology	1		93	89	(4)
Design Analysis	1		54	53	(1)
Physics	1		54	53	(1)
Social Studies	37		59	57	(2)
Recognition	10		63	63	(0)
Physical Environment	1		67	63	(4)
Social Environment	1		68	67	(1)
Political/Economic Environment	5		61	62	(-1)
History	3		64	63	(1)
Translation	4		45	46	(-1)
Physical Environment	4		45	46	(-1)
Interpretation	13		61	59	(2)
Physical Environment	3		46	47	(-1)
Social Environment	5		67	64	(3)
Political/Economic Environment	2		59	55	(4)
History	3		67	63	(4)
Application	4		57	54	(3)
Physical Environment	1		42	39	(3)
Social Environment	2		63	61	(2)
Political/Economic Environment	1		59	55	(4)
Analysis	6		57	54	(3)
Physical Environment	4		60	59	(1)
Social Environment	1		61	54	(7)
History	1		41	37	(4)

^aThese differences are set off in parentheses to emphasize the point that these differences were not provided on the Right Response Summary results for Grade 6 Level I studies because comparable national normative data were not available.

Right Response Summary Results for
Reference Skills, Science, and Social Studies

Grade 6 Level II

Content and Thinking Process Areas	Number of Items	Average Percentages Correct			Difference (State-Nation)
		District 6.7	State 6.7	Nation 6.7	
Reference Skills	20	68	68		0
Recognition	9	67	66		1
Parts of a Book	4	62	64		-2
Dictionary Skills	3	83	82		1
Library Use	2	50	48		2
Application	11	68	70		-2
Dictionary Skills	5	69	71		-2
Library Use	6	68	69		-1
Science	36	55	56		-1
Recognition	6	49	50		-1
Physics	2	52	56		-4
Earth Science	1	43	45		-2
Ecology	1	55	55		0
Botany	1	40	46		-6
Zoology	1	50	44		6
Classification	7	68	66		2
Physics	2	64	64		0
Botany	1	76	70		6
Zoology	2	76	75		1
General	2	59	59		0
Quantification	6	73	74		-1
Chemistry	2	64	65		-1
Zoology	4	78	78		0
Interpretation	6	40	42		-2
Chemistry	2	41	45		-4
Physics	1	41	40		1
Earth Science	1	29	31		-2
Zoology	2	44	46		-2
Prediction from Data	7	49	50		-1
Chemistry	3	43	46		-3
Physics	3	54	54		0
Earth Science	1	51	53		-2
Hypothesis Evaluation	3	50	54		-4
Chemistry	1	32	36		-4
Physics	1	66	71		-5
Earth Science	1	54	56		-2
Design Analysis	1	42	39		3
Zoology	1	42	39		3
Social Studies	37	55	57		-2
Recognition	13	53	56		-3
Physical Environment	2	65	64		1
Social Environment	5	49	51		-2
Political/Economic Environment	5	53	58		-5
History	1	49	58		-9
Translation	7	59	63		-4
Physical Environment	7	59	63		-4
Interpretation	5	57	50		-1
Physical Environment	1	44	44		0
Political/Economic Environment	3	59	59		0
History	1	62	68		-6
Application	8	52	54		-2
Physical Environment	1	46	50		-4
Social Environment	1	46	49		-3
Political/Economic Environment	4	51	54		-3
History	2	59	59		0
Analysis	4	56	57		-1
Physical Environment	2	56	57		-1
Political/Economic Environment	2	57	57		0

Right Response Summary Results for
Reference Skills, Science, and Social Studies

Grade 11 Level IV

Content and Thinking Process Areas	Number of Items	Average Percentages Correct			Difference (State-Nation)
		District 11.7	State 11.7	Nation 11.7	
Reference Skills	20		64	68	-4
Recognition	4		70	72	-2
Library Use	4		70	72	-2
Application	16		62	67	-5
Dictionary Skills	5		68	73	-5
Library Use	11		60	64	-4
Science	40		52	57	-5
Recognition	8		62	69	-7
Chemistry	2		73	79	-6
Physics	2		70	75	-5
Ecology	2		58	65	-7
Zoology	1		44	65	-21
Botany	1		50	53	-3
Classification	4		52	62	-10
Chemistry	1		45	57	-12
Ecology	3		54	63	-9
Quantification	1		48	46	2
Physics	1		48	46	2
Interpretation	8		49	55	-6
Chemistry	1		39	47	-8
Physics	4		48	54	-6
Earth Science	2		53	58	-5
Zoology	1		54	64	-10
Prediction from Data	6		54	58	-4
Chemistry	1		62	72	-10
Physics	1		45	47	-2
Earth Science	1		57	60	-3
Ecology	2		58	62	-4
Botany	1		45	44	1
Hypothesis Evaluation	8		51	54	-3
Chemistry	1		59	67	-8
Physics	1		75	79	-4
Ecology	1		42	36	6
Botany	3		46	51	-5
Zoology	2		48	48	0
Design Analysis	5		42	43	-1
Chemistry	1		49	53	-4
Ecology	2		43	44	-1
Zoology	2		37	39	-2
Social Studies	39		57	61	-4
Recognition	5		52	60	-8
Social Environment	1		52	60	-8
Political/Economic Environment	2		57	64	-7
History	2		47	56	-9
Translation	1		53	54	-1
Physical Environment	1		53	54	-1
Social Environment ^a	4		69	71	-2
People Interaction	4		69	71	-2
Interpretation	8		58	61	-3
Physical Environment	1		64	68	-4
Social Environment	5		55	59	-4
Political/Economic Environment	1		44	43	1
History	1		78	81	-3
Application	12		55	60	-5
Physical Environment	2		52	55	-3
Social Environment	4		52	55	-3
Political/Economic Environment	4		59	66	-7
History	2		57	60	-3
Analysis	9		58	61	-3
Physical Environment	2		66	70	-4
Social Environment	5		53	56	-3
Political/Economic Environment	2		61	68	-7

^aSocial Environment is not a thinking process area.